USER INVOLVEMENT IN SERVICE DESIGN

A CASE STUDY ON DESIGNING A NEW SERVICE CONCEPT FOR CULTURAL INSTITUTIONS

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2013-2014

ACKNOWLEDGEMENTS

This thesis was written between September 2013 and March 2014. I have gained remarkable amount of knowledge and understandings of the field that I studied in this thesis work. During the writing period, I received tremendous helps from many insightful people. Without these helps, it would not be possible for me to accomplish this work.

First of all, I would like to thank my supervisor professor Lily Diaz-Kommonen who guided me to the right research direction. I really appreciate the inspiring ideas and instructions given by her in every stage of this thesis work. Also I would like to mention the help from assistant professor Oscar Person who offerd valuable advices through the writing process. Moreover I would like to thank professors and other faculties from International Design Business Management program, especially professor Peter McGrory, Mikko Koria and Kalevi Ekman, as well as study coordinator Naoko Nakagawa. I have learned too much from this Master's program. I am proud of being part of it. Special thanks to Ningfeng Zhang and Faraz Khan for the proofreading that made this thesis more comprehensive. Many thanks to my team members of Siteknows project, especially Ye Huang and Dan Qin who made tremendous efforts with me for the project research work. Finally, I cannot thank my family and friends too much for your consistent support from various aspects.

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Master of Arts thesis abstract

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Title of thesis User involvement in service design: A case study on designing a new mobile service concept for cultural institutions

Department Design Department

Degree programme International Design Business Management

Year 2014 **Number of pages** 78 **Language** English

Abstract

Recently, smartphones have been changing our daily lives by constant applications of new technologies and enabling new services. Cultural institutions are those institutions that usually embrace new approaches to help realize their missions. A multi-disciplinary team formed by students working toward a Master's degree from Aalto University has been developing a new mobile service, as a start-up project, for cultural institutions by applying a relatively new technology.

The challenges of developing this new service are to define the customer values for potential users, and creating a service system that involves different stakeholders. The aim of this thesis is to create a service concept that would allow the project team to describe the elements of the system and its usages to the client, particularly from the point of view of service design and cultural institutions.

As a designer the author takes the responsibility to discover and present the future customer needs, and using different user involvement techniques to gather and analyze data from users, as well as integrating them into the service concept development process. This thesis presents an overview of user involvement in theories of human-centered design. The related user involvement techniques are analyzed from different theoretical aspects. Then it describes the application of a number of specific techniques through different stages of service concept development process. In the end a series of tools are presented to demonstrate the outcome service concept, which describe the service system, customer journey process, and implementing guideline for stakeholders.

Keywords Service design, User involvement, Service concept, Mobile service, Cultural institution

CONTENT

01

INTRODUCTION

1.1 Background and Initiative

Siteknows project is about creating a new mobile service. This service focuses on enhancing on-site information service and location-based social network features for cultural institutions. A multi-disciplinary team formed by students working towards a Master's Degree from Aalto University has been developing this service as a start-up project. This thesis expressly describes the entire service concept creation process in Siteknows project.

The initiative of the project is the application of a relatively new technology: Wi-Fi based indoor positioning technology. This positioning technology is based on measuring and recording the intensity of the received Wi-Fi signal from the wireless access points. It determines user location by matching the observed signal strength to the recorded signal strength information. With this technology, tracking the position of a mobile device could become more precise (Bahl & Padmanabhan 2000). The project team has the ability to develop this technology and consider applying this technology in a commercial service. This new technology is considered to enable more possibilities for location-based service (Yu Zheng 2011， Bahl & Padmanabhan 2000). The project team intends to create a new mechanism that enhances the interaction between the information service from site (physical space) owners (physical space owner) and site visitors, especially for on-site usage.

Additionally, the project team was inspired by the phenomena and trends of mobile experience

service offering in cultural institutions whose definition here specifically means museums, monument/historic site and art gallery. These phenomena and trends include, for example the popularity of smartphone applications in cultural institutions, emerging of a new revenue model for delivering audio tour, and the limitation of the current model in developing a mobile experience for cultural institutions. Based on the research in this field (Proctor 2011a, Proctor 2011b, Tallon 2013, Burnette et al. 2011), the project team recognized the chance for a third party to provide a platform that enables institutions to create, manage, and deliver content for their visitors. The team's objective was to build a mobile service platform that delivers interactive on-site information service supported by the utilization of the Wi-Fi based indoor positioning technology, for cultural institutions. This platform should have the ability to achieve the following goals: providing an integrated mobile experience to visitors, involving cultural institutions to enable the service system, and enabling a new social network among visitors and cultural institutions.

The author of the thesis proposes to develop and visualize the service concept of this platform. This means utilizing the specific skills and abilities as a designer in the service concept development process, which includes understanding user' cultural frames, modeling their behavior in relation to the service, as well as visualizing and expressing what other people cannot see (Morelli 2002, Morelli 2007).

It is necessary for the author to adopt a concept called user involvement, in order to develop a service concept that is more original, and holding a relatively high level of perceived user value, in the early stage of a service development process (Magnusson et al. 2003, Kaasinen et al. 2010, Meroni & Sangiorgi 2011). User involvement refers to the methods and processes used to gather and analyze user data, as well as to integrate user data in the service development process (Kaasinen et al. 2010). Different user involvement techniques with different focuses are used to support different stages of Siteknows project. The visitors of cultural institution can be involved in helping define the mobile opportunities of cultural institutions, generate ideas that represent user value, prototype service system, and evaluating usability and user experience of service concept and related human computer interface design.

Cultural institutions are among the critical stakeholders who stand to benefit from using this platform and contribute to this platform. Different cultural institutions, such as museums, monument/historic site and art galleries, have different understandings of mobile experience offering and mobile service concept, which may challenge the implementation of the service concept. It is crucial that all parties involved in this platform have a shared understanding of the system from configuration of the system to service delivery to customers. For the sake of further development and implementation of the outcome service concept, a series of maps and vocabularies are developed and presented. It would allow the team to describe working principles of Siteknows system, the benefits to be gained from its use, as well as feasibility details, from a service design perspective.

1.2 Objectives

The overall objective of this thesis project is to develop a new mobile service concept for cultural institutions. To achieve this goal, it is necessary to understand the nature of a service concept and to specify the purpose of usage of the resulting concept. It is also important to take advantage of the understanding from the new service development literature and related techniques. Therefore, two main research questions that form the core of this thesis are:

Research question 1: How to define a service concept that would allow the project team to describe, the elements of platform and its usage to the client, particularly from the point of view of service design and cultural institutions?

Research question 2: How to implement service design theory and related user involvement techniques to support this new service concept design process?

1.3 Research methodology

This thesis work is an exploratory qualitative research that aims to gain understanding of the process behind of a new service concept development for cultural institutions. To address the two main research questions, a literature review and an empirical study will serve as the research methodologies of this thesis work.

Pertaining to the characteristics of the first research question, it is necessary to adopt literature review methods to define the meaning of service concept, and utilize qualitative research methods to address the representation of the outcome concept. This thesis reviews the existing relevant literatures about new service concept development . The objective here is to have a comprehensive understanding of the theoretical work available for service concept development that guides the development process of Sitenows project. A definition of new service concept will be illustrated from different perspectives. Following this, the innovativeness and developing process of the new service concept will be discussed in the field of service design literature.

The author has attempted to examine existing research from human-centered design (HCD) literature to find out which kind of knowledge of user involvement has been developed. Six theoretical aspects are suggested by the author: Usability& User experience, Participatory design, Ethnographic fieldwork, Contextual design, Co-design, Agile design. User involvement techniques collected from these aspects will be analyzed by different characteristics, in order to understand the implementation of techniques in design process.

In the empirical study, numbers of techniques will be implemented in the new service concept development process, which depends on the needs of service design process. The implementation process and outcome of each technique will be presented.

1.4 Structure

This study is divided into six chapters. The introduction section addresses the initiative, objective, methodology, and structure of this thesis work. Following the introduction the study is structured as follows: Chapter two addresses the background of this mobile service development situation of cultural institutions. It discusses the trends and phenomenon of mobile service in the cultural institution field, as well as corresponding opportunities. Chapter three investigates the definition of new service design, and user involvement theories, and relative techniques for designing a new service concept. Different theories and approaches will be discussed to illustrate the different perspectives of processing user data. Chapter four introduces the stages of Siteknows project where user involvement techniques are implemented. Chapter five focuses on the result of the service concept design. The form of the concept is a series of widely –used visualized approaches in service design industry. Finally, chapter six draws the conclusions from the result of this thesis research.

02

BACKGROUND

2.1 Mobile service and cultural institutions

Mobile experience has been developed by cultural institutions for many years since Stedelijk Museum's radio tours in 1950. The forms of these experiences are various from audio-cassette tour, CD tour, PDA tour etc. Recently, cultural institutions are embracing the trend of delivering mobile experience with smartphones. (Proctor 2011b)

Over the last two decades, the visitor of cultural institutions has been attracted by other ever-rising activities for entertainment, learning, and dialogue. According to Simon (2010) they don't attend museum exhibits and performance as regular as they used to. To cope with this challenge, cultural institutions need to discover new approaches to invite more people to actively engage as cultural participants in a relatively more interesting and interactive manner, not passive visitors whose visiting routine presented in a conventional seeing-receiving model. This is what typically happens in the passive-type experience where there was a unilateral information delivery between the objects exhibited and the visitors (Simon 2010) . The limitation of this unilateral information delivery offered a "monologue" to visitors in which they could only receive the explanatory information towards a specific object exhibited provided by the cultural institutions. It rarely offers feedback process and other related interactive activities that may create a "dialogue" between the visitors and the cultural institutions. As not only does the smartphone mobile service meet the needs of visitors to access to a broad spectrum of information, but also enables a "two-way" communication, it is considered a new channel to realize the goal of transforming to participatory

institutions (Proctor 2011b).
Since smartphones give museums and other cultural institutions a new vision to deliver contents to their visitors in a more interactive manner, large number of famous cultural institutions have provided mobile applications (Tallon 2013), for instance, the Vatican Museums, Guggenheim Bilbao, the Museum of Modern Art in New York, Louvre, and the American Museum of Natural History. Certain numbers of these mobile applications have some more advanced features different from traditional forms (such as traditional audio tour, the cellphone tour, the podcast and similar downloadable content), and achieved their goals to engaging visitors. As an example, the “Explorer” developed by the American Museum of Natural History’s, provides indoor floor map and positioning feature in addition to the similar items browsing features as traditional audio tour. Further, the “turn-by-turn directions” feature helps visitors get to their next exhibit, a cafe, or anywhere else in the museum, by using the quickest route possible. More importantly, it enables sharing an interesting exhibit through email, Facebook, or Twitter, which helps connecting museum and outside world, and affects the social networks of visitors (American Museum of Natural History 2011).

Although mobile applications provide considerably better user experiences for visitors than other forms, it still has its limitations. The cost of mobile application (native mobile application) development is often higher than others’, for example mobile website (Charland & Brian 2011). It is more likely to be used by larger institutions that have more resources to support the mobile application

Figure 1. Features of mobile applications from famous cultural institutions
(Sample applications are from Apple’s IOS operating system, accessed in Sep, 2013)

APPLICATIONS / FEATURES	Item viewing	Gerneral Info	Guided tour	Current exhibitions &events &news	Visiting plan& Bookmarking	Museum building presentation	SNS sharing
Pompidou, by Centre Pompidou	●	●	●	●	●	●	●
Guggenheim Bilbao, by Guggenheim Bilbao	●	●	●	●	●	●	●
MOMA, by Museum of Modern Art	●	●	●	●	●		●
Uffizi, by Uffizi	●	●	●	●	●	●	
Explorer, by The American Museum of Natural History	●	●	●		●		●
Louvre, by Louvre	●	●			●	●	
De Young Museum, by De Young Museum	●	●	●	●			
The Vatican Museums, by The Vatican Museums	●	●	●				
The National Gallery of Victoria, by The National Gallery of Victoria	●	●		●			
Love Art, by National Gallery	●	●					
iMuseum, by Musee d’Orsay	●						

development (Tallon 2013). The project team analyzes the commonalities of numbers of mobile applications provided by famous cultural institutions worldwide. Features of mobile applications From famous cultural institutions. The features of these mobile applications are quite similar to each other as shown in Figure 1. It indicates that different institutions repeatedly input resources to develop individual mobile applications that are very similar to other institutions'. Moreover, the users of these applications have to install different applications from various institutions for accessing similar features, which might cause the fragmentation of user experience. An assumption can be made that there could be one platform for all. It means having an integrated mobile application with numbers of core features for all users. It can enable a more holistic user experience for users and less repeated development costs of cultural institutions.

In addition, the smartphone is also challenging the existence of the audio tour delivery including its working process and its revenue model; both of these have been developed by cultural institution for several decades. Burnette et al. (2011) review revenue models of the audio tour, which has been developed over the 60-year history. The various revenue models range from traditional tour rental to current mobile giving. The represented business models are Digital retail (application/download sales), Freemium (e.g. in-application sales), Donations (e.g. by text message), Subscription content (e.g. iPad catalogs, magazines), Sponsorship and ad-supported content, Monetizing data from mobile social media, Providing devices for blockbusters in the "bring your own device"(BYOD) economy, and Using mobile to support membership and other revenue channels. Under the background of rising popularity of the smartphone, and increasing availability of Wi-Fi in the cultural institutions, Burnette et al. (2011) demonstrate that BYOD (bring your own device) movement can enable another new revenue and delivering model —open data model (summarized by Proctor 2011a). This new model means museums provide data and content to third parties, and third parties develop mobile applications and other products for museum and its visitor. They also point out: "In theory, no device for the museum to manage means less capital cost and fewer public-facing staffing costs." It reveals the attraction for museums creating interactive experiences that rely on the visitors bringing the devices or using their own devices outside of the museum.

There are other evidences showing that a new mobile experience delivering model is in need, from the status of development of mobile experience. In the current dominant model used to develop a mobile experience, each institution is developing application for itself, no matter the cost is afforded by the institution or other parties. Institutions are more likely to complete the tasks in-house, like project planning, script development and production, marketing, content management, and distribution etc. Whereas they outsource tasks like technical/ software development, publishing to the application store, and publishing to devices. Although different institutions have different development process; but the single model is that individual cultural institution develop a mobile project and market it by the institution itself. This means institutions have to afford cost of every stage of this process, which is not economically affordable for some small and medium sized institutions. According to the Museums & Mobile Survey 2013 (Tallon 2013), the annual attendance threshold at which the majority of respondent's cultural institutions have a mobile experience has dropped remarkably (from 250,000 visitors in 2012 dropped to less than 50,000

visitors in 2013). There are still 41percent of participants from institutions with less than 50,000 annual visitors (small and medium sized institutions) reported that they “currently had no plans to use mobile”, which reflects a reality that the previous models need to evolve to be more accessible for small and medium sized institutions.

Moreover, as increasingly more institutions involve in this trend, the challenges of delivering mobile experience are changing. The Museums & Mobile Survey (Tallon 2013)shows that ensuring the mobile experience supports the institution’s mission, designing the mobile experience, and production of content are becoming increasingly less challenging. In the author’s opinion, this means museum professionals might have formed a common understanding of the positive effects of delivering mobile experience. It is also increasingly easier to deal with the design and content production issues in the development process. The reason of these trends could be understood that the exploration of numbers of smartphone projects of pioneer institutions have decreased the uncertainty of design work. A number of digital content production tool have been developed, as well as the more related research works have emerged to assist the development process. For instance TAP tool that consists of a collection of free and open-source tools which support the creation and delivery of mobile tours is available for those institutions that plan to produce and manage the contents in in-house manner (The U.S. Institute of Museum and Library Services 2012). Though not necessarily focused on mobile platforms, the DECIPHER (Digital Environment for Cultural Interfaces: Promoting Heritage, Education and Research) project is supported by the European Commission and it aims to support the discovery and exploration of cultural heritage through story and narrative (Decipher Secretariat 2013). Therefore a new model that offers more economical solution of content production and management is an upcoming trend.

On the other hand, the Museums & Mobile Survey (Tallon 2013) demonstrates that encouraging usage of the mobile experience by visitors, keeping the experience up-to-date and maintaining the resources required to sustain the mobile experience are becoming increasingly more challenging. It means that promotions and maintenances after application development are becoming more difficult. If there is a platform-like application that offers mobile experience for all the cultural institutions, this application is more accessible for visitor compared to different individual application (lower promotion cost), and the maintenance cost is also lower for individual participant institutions.

In the article of Mobile Business Models in a 2.0 Economy, Proctor (2011a) claims that “this model offers perhaps the most potential for business innovation, by inspiring new kinds of partnership and revenue streams.” The open data model could be considered promising mobile experience delivering model, in both aspect of economical reason and supporting institution’s mission. It has the potential to provide more accessible and integrated user experience with lower cost, by enabling the collaboration among different stakeholders. This model has a potential to create mobile experience through a generalized platform that could reach visitors beyond individual institutions. This is a benefit that can also help to realize cultural institutions’ mission.

2.2 On-site information service– new possibilities of location-based service (LBS) and location-based social network (LBSN)

As the mobility of smartphones is emphasized, the location-based service (LBS) and location-based social network (LBSN) are discussed frequently in mobile application development industry. There is no clear research definition of LBS. It can be understood as a type of computer program service that takes advantage of location and time data as control features. It makes use of geographical position of mobile device and provides accessibility of relative information and entertainment services through mobile network. It has been widely considered that LBS play an ever-increasingly important role in everyday life, such as health, indoor object search, entertainment, work, personal life, etc. (For example FIDIS 2008)

The LBS has a number of applications in social networking today. An example is location-based social network (LBSN). The typical LBSN applications are Foursquare, and Flickr, which are increasingly popular worldwide. For instance, Foursquare has reached over 40 million people worldwide user, over 4.5 billion check-ins, with millions more every day, by 2013 (Foursquare 2013). The dimension of location brings social networks back to reality, bridging the gap between the physical world and online social networking services. The LBSN uses texted location information or mobile phone tracking to enable location-based services to enrich social networking. To enrich social networking means to extend the existing social network from real world to digital form, as well as to generate new social network based on real location but enabled by digital tools. This is because it connects the information and the environment of needed information with the users bodily location, so that, to make informed decisions, he (she) can have the knowledge of what is available and where.

With the rise of smartphone and new mobile network and other new technologies, the meaning of LBSN& LBS has continued to develop. According to Zheng (2013), LBSN enables people to share location-embedded information by using a location within the existing social network. Additionally, it creates new social structure that is based on the interdependency derived from physical location and location-tagged content.

In the context of cultural institutions, there already exists a social initiative of communication and information sharing to support the existing social networking. For example museum-goers might like having conversation with their companion while they are having a tour in a museum. This social conversation can be extended in a way that includes both the visitor present in a tour, for example, as well as those who are not physically present. Moreover, the real spaces, the collection in exhibition, the events of institution also provide appropriate conditions that can be used to generate interdependency among institution’s visitor. This in effect involves generating new social network structures.

At the same time, LBSN mobile applications can focus on the sharing of information generated by

users, for example getting location-activity recommendation from other users who have experienced this place. A few social network mobile applications provide information or service from the owner side, and are mostly limited to sales information, like the Yelp's Group buying information . This information is mainly used for before visiting rather than being used at on-site. There is not much information that is more informative and reliable from site owner side. It is concerned by professionals in the industry that the simple user generated content is unsustainable. For example Erlich (2010) points out the problem of the most important feature "check-in" of Foursquare: "The check-in, as a stand-alone act, is fundamentally empty. It begs to be put into context." It refers to the concern of the practicability of user generated content.

The current LBSN applications could not enable the mechanism that meets the needs of site owners to publish information or provide services for on-site usage. Nevertheless, there is a chance for LBSN application to provide a new mechanism that enhances the interaction between site owners and site visitors, by offering a content management system and a more precise delivering form. The content management system could help site owners to create and manage their contents based on their working process, and the mobile application is able to deliver those contents in a manner that is more precise and appropriate for the on-site usage. For example, the museums could upload their text, audio and image materials, and then organize these contents for different exhibitions, by using a content management system. The LBSN application delivers these contents in the forms that support the using context of visitor, for example the visitors receive the contents in the form of location aware self-guided tour.

2.3 Siteknows Project

Inspired by the phenomena and trends mentioned above, the Siteknows project team is going to take the advantage of the Wi-Fi based indoor positioning technology to enable a new mechanism that could be the most advanced feature of a new mobile service platform for cultural institutions. This target mobile platform should provide an integrated user experience from the visitor's perspective, and especially focus on enhancing interactive on-site service experience and location-based social network features. The ultimate objective service delivery for users should be an information service that supports the whole cultural institution visiting journey. Cultural institutions can use a content management system provided by the platform to deliver the content to their visitor, as well as to have interactions with visitor.

To develop such an integrated system, the project team needs to deal with the various issues including designing mobile application interface, business model, developing networks with stakeholders, etc. However, the scope of this thesis addresses this project development process from the service design perspective. The objective of this thesis study is to develop and represent the service concept in question.

In this thesis work, the author needs to lead the project team in understanding the circumstances and hidden opportunities of mobile service of cultural institutions. This means that the author will be using design techniques to discover and visualize the current mobile service and corresponding user experience. Then facilitate the idea generation process to create concepts that have the potential to solve existing problems and meet the future needs of users. Furthermore, the author needs to facilitate the transferring of research findings into design solutions in the design process for example, help design team fabricate the user scenarios for a specific functionality to come up with corresponding design features. Lastly, represent the outcome service concept, which can be seen as an effort to form a common understanding of this service concept.

The Kiasma museum of contemporary art is chosen to be the first pilot cultural institution where the team conduct the user research in this project. There are two main reasons of selecting of Kiasma museum. One is that the Kiasma museum belongs to the type of art museum. Art museum is the most active type of cultural institution offering mobile experience (Tallon 2013, p 4). Kiasma museum has developed some mobile experience project, such as mobile application, and mobile website based audio guide. These previous mobile experience offering efforts and understandings of mobile experience of Kiasma museum staff are helpful for the communication of the Siteknows development. Another reason is that Kiasma is one of the most famous and representative cultural institutions of Helsinki, which is helpful for generating more attention to the new concept after the potential success of the experimentation in Kiasma museum.

03

LITERATURE REVIEW

3.1 Designing a digital service

Different definitions of service can be found in marketing literature, with the dominant logic of service transferring from goods-dominant to service-dominant. To distinguish service-dominant view from goods-dominant view, Vargo & Lusch (2004) provide a definition “services as the application of specialized competences (covering knowledge and skills) through deeds, processes and performances for the benefit of another entity or the entity itself”, which emphasizes the intangibility, exchange process, and relationships of service.

Digital services are increasingly discussed as a subset of services; this is the result of the digital infrastructure’s capabilities of providing digital services in new and different ways. In addition to normal service, Williams et al. (2008) define the characteristics of digital service as:

> “1) Being digital, at least for a portion of the interaction.
> 2) A different sense of tangible vs intangible.
> 3) Often the digital service is a coordination or arrangement of something physical.
> 4) The idea of ownership is more subtle including digital rights for a certain purpose vs outright ownership.”

William et al’s description helps to understand the unique property of digital service. Taking this further, they also suggest four fundamental design dimensions to distinguish the service design

objectives of one service from the other. These four dimensions are service delivery, service maturity, malleability (provider and user), as well as pricing and funding. These can be used to classify and contrast different digital services.

Though there is no single definition that could cover all the aspects of service design. The service design process has often been seen as part of new service development (NSD) process , and integrated in the context of service development, management, operations and marketing. Recently, the practices of design professionals, namely designers, in new service development field have been emphasized (Kimbell 2011). From the design perspective, service design could be understood as a way that systematically applies design methodology and principles to develop a new service. It can be considered, in contrast to service development, as a human-centered approach and an outside-in perspective (Holmlid 2009). It has been a common view that to put users in the center is one of the core issues of designing a service (Meroni & Sangiorgi 2011, p3).

To summarize, applying design methods systematically, namly designing service is a way to develop a new service, which pays special attention on the users in the development process. This designing process could be seen as service design process that is integrated in NSD process. For designing a digital service, it is necessary to take a service dominant view to understand the nature of service. The distinctive characteristics and objectives of digital service should also be considered in the designing process.

3.2 Service concept

As one of the three characteristics of service identified by scholars (Parasuman et al. 1985), the intangibility reveals the reality that most services cannot be seen, touched or held because they lack a physical existence of form. Because of the intangibility, it is difficult for service provider to understand how customers perceive their services and service quality. In a new service development process, it is also very challenging to make the intangibility of a service idea tangible to management, stakeholder, employees, suppliers, investors and customers. It is required that all parties involved in service design need a shared understanding of the service in mind in order to move from idea to design to delivery. Therefore a tool or language that describes the shared understanding is needed.

The service concept has been defined in many different ways. First it can be found in marketing and management literature. In Breaking Free from Product Marketing, Shostack, (1977) uses a molecular model to present goods and services as combinations of discrete tangible or intangible elements. She argues that because of the abstractness of services, consumers cannot experience the service directly, but only through evidence. The usage of evidence can be seen as the attempt to make the intangibility comprehensible. Shostack’s later work of service blueprinting, (Shostack 1987) continues her thoughts on the evidence. She uses a flowchart form to show how “service can be engineered at the drawing board, as well as a tool for identifying gaps,

analyzing competitors, aiding in market research, and controlling implementation." This could be an approach to organize the tangible evidence of a service.

In marketing literature, the attempt has been made to define the service performances referring its different components. Lovelock & Wright (1999) implemented the "8Ps" in service context, which encompass the element of service: product, process, place, physical evidence, people, productivity and quality, as well as price and promotion. The 8Ps helps to define the above mentioned components of a service offering, but no guidance is offered for the usage in practice.

Edvardsson & Olsson (1996) refer to service concept as prototype for the service, which means the customer utility and the benefits that the service and its various sub-services are intended to provide and convey to the customer. In Edvardsson and Olsson's service concept model, it specifies primary and secondary customer needs. The primary needs are those which act as a "trigger", i.e., the reason why the customer experiences a certain need. Further these primary needs are satisfied by the core service. The secondary needs are functions or results of the chosen service, which are correspondingly satisfied by supporting services. In another words, it should explain what is to be done for the customer and how this is to be achieved.

Clark et al. (2000) propose that service concept is the mental picture of the service that is held by customers, employees, and shareholders of the organization or "service in the mind". This "picture" or statement should encapsulate the nature of the service business and captures the value, form and function, experience, and outcomes of the service. In terms of the functions of service concept, they suggest that the service concept may translate ideas into profitable services, as a tool to align different corporate functions, employees, and customers.

In order to know how service concept enhance the service design process, Goldstein et al. (2002) apply the service concept to service design planing and service recovery design processes. Moreover they propose that service concept can be the key driver of service design decisions at all levels of planning, by supporting the developing of marketing content (the what) and operations content (the how) of a service as well as by facilitating alignment between the strategic intent and the service offering.

In summary, the service concept is a frequently used term in the service design and new service development literature. The definition of service concept varies and has been developed along with service literatures. With regard to the role of service concept in the service design and new service development process, service concept first describes the customer benefit or value, customer perceived experience, as well as physical and non-physical components of a service system. This description of service offering is able to help mediate between customer needs and an organization's strategic intent, and drive design decisions.

3.3 Characteristics of service innovation

New service development (NSD) is the overall process of developing new service offerings, and is concerned with the complete set of stages from idea to launch (Goldstein et al. 2002). Some of new service development create some significantly improved service concepts, which can be considered as service innovation. In order to understand the service innovation, it is necessary to address the defining characteristics of different typologies of service innovation, which is also an importance topic in the NSD literature. The typologies of service innovation in NSD literatures similar to product innovations using degree of newness; places them in a continuum from incremental innovations to radical innovations (Kaasinen et al. 2010, p19). We can see here how the logic of the typologies is shifting from goods-versus-service perspective toward the service-dominant logic (Paswan et al. 2009).

In new product development (NPD) paradigm, there are two often seen defining characteristics of the type of innovation, which are the newness of technology and the newness of market. For example, using these chracteristics Loch (2000) identified 90 NPD projects into three clusters by these two characters. The three clusters are: “Incremental projects” (low technical and market newness, low product extension, low market growth), “Line extensions” (Low market newness, low market growth, little new technology developed), “Radical project” (new technology developed, high technical and market newness, high market growth).

Kaasinen et al. (2010, p 20) summarize the service innovation classification, originally offered by Gallouj & Weinstein (1997) : First, the radical innovation, is the category that is totally new service including new benefits to customers, new systems and processes are used in providing the service, and new competencies are needed. Second, the Improvement innovation means those service that have better value provided through improvements in providing or competencies. Third, the Incremental innovation presents the category that is not a residual when the change does not represent radical innovation, but exists when one or more elements are added, eliminated or substituted to service. Fourth, the recombination innovation is new services developed either by combining existing services or splitting up an existing service. Incremental innovation can also be seen as a particular case of this service innovation type. Fifth, the formalization innovation means the type of services that have one or more characteristics of service that is formatted or standardized, and this can clarify the service offering and the benefits it provides. Last, the ad hoc innovation represents those services having elements and expertise that develop in connection with tailored solutions and can be transferred to new situations. In this classification, the newness of system, process and competence and such intangible dimensions are considered as the characteristics, in addition to the characteristics from NPD paradigm.

Paswan et al. (2009) offers an overview of past research on service innovation typologies. See Figure 2. They also illustrate the defining characteristics of all these typologies in a table for noticing the similarities. First, characteristics of service/products innovation from Gadrey et al. (cited in Paswan et al. 2009)’s research are architectural innovation, service modification, and process innovation. Service innovations are grouped by Debackere et al. (cited in Paswan et al. 2009), by

breakthrough projects, platform projects, and derivative projects. Following, Avlonitis et al. (cited in Paswan et al. 2009) offer a more expanded service innovation typology: new-to- the-market services, new-to-the-company services, new delivery processes, service modifications, service line extensions, and service repositioning. Then is Booz et al. (cited in Paswan et al. 2009)'s similar typology: new-to-the-world products, new in the eyes of customers, new product lines, products that represent new challenges to the firm, additions to existing product lines, improvement and revisions to existing products. Last, flexible solutions, controllable convenience, comfortable gains, and respectful access, are used by Berry et al. (cited in Paswan et al. 2009).

To help managers approach service innovation systematically, Paswan et al. (2009) characterized the type of innovation that is embedded in the service-dominant logic on three contextually relevant dimensions: perceived environmental uncertainty (high or low), service firm's strategic

Figure 2. An overview of past research on service innovation typologies Paswan, et al. (2009)

Definitions in the Product Innovation Literature	Source[a]	Booz, Allen, and Hamilton (1982)	Wheelwright and Clark (1992)	Crawford (1997)
	Defining characteristics	New-to-the-world products	Breakthrough projects (fundamental changes to existing products)	Pioneering
		New in the eyes of customers	Platform projects (new product lines)	Adaptation
		New product lines	Derivative projects (incremental changes)	Imitations
		Products that represent new challenges to the firm		
		Additions to existing product lines		
		Improvement and revisions to existing products		

Definitions in the Service Innovation Literature	Source[a]	Gadrey et al. (1995)	Debackere et al. (1998)	Avlonitis et al. (2001); Alam (2006b)	Berry et al. (2006)
	Defining characteristics	Innovations in service products	Breakthrough projects (fundamental changes to existing service)	New-to-the-market service	Flexible solutions
		Architectural innovation (un/bundling of existing service products)	Platform projects (new service lines)	New-to-the-company service	Controllable convenience
		Modifications of service products	Derivative projects (incremental changes)	New delivery process service	Comfortable gains
		Innovations in processes and organization for existing service		Service modification Service line extension Service repositioning	Respectful access

orientation (cost control or differentiation), and managers' market orientation (market or firm focus). Respectively, the environment uncertainty is to capture the external forces influence on the service innovation. The strategic orientation as the second dimension to represent the internal factors that influence service innovation. Market orientation as a key determinant of successful innovation, is to capture the firm's ability to collect and use market information effectively. Accordingly, these contextual anchors consist of eight possible typical service innovation strategies. For example, one type of service innovation that is with low environmental uncertainty, low market orientation, and cost leadership, could be fit into the strategy that is incremental service innovation with a focus on creation and/or delivery efficiencies through high firm control and low customer involvement.

In summary, the existing literature on service innovation offers several typologies with different perspectives. The service innovation literature have been strongly influenced by the product innovation literature. The perspective of these typologies are shifting from focusing merely on services' differences to not only considering their differences but also their shared commonalities (Paswan et al. 2009, Kaasinen et al. 2010).

3.4 Process of service design and new service development

As described precedently in page 21 and page 23, new service development (NSD) is the overall process of developing new service offerings.The service design process has often been seen as part of process of NSD. In this section the author reviews some of the models that are used to illustrate NSD and service design process.

Below, see Figure 3, the author includes the linear and parallel model of NSD as examples (Alam & Perry 2002). These two models are used to identify the stages in the NSD process, and the obtainment of customer input of each stages. Both these models are similar to the stages of new product development (NPD), e.g. idea generation, test, and launch. In addition, both of them

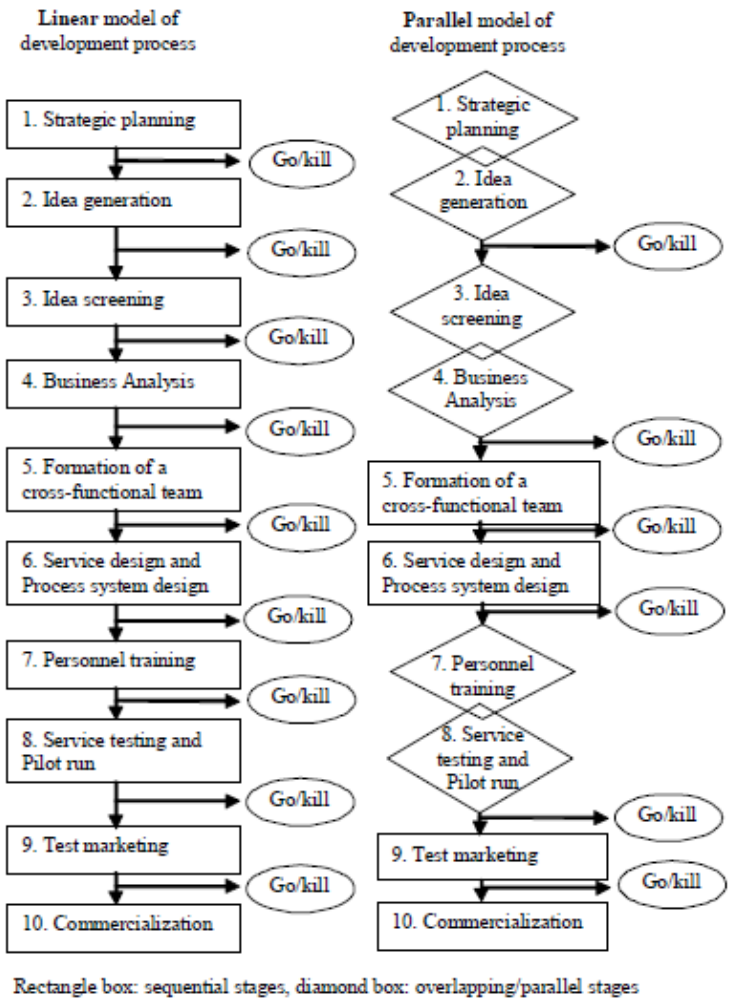
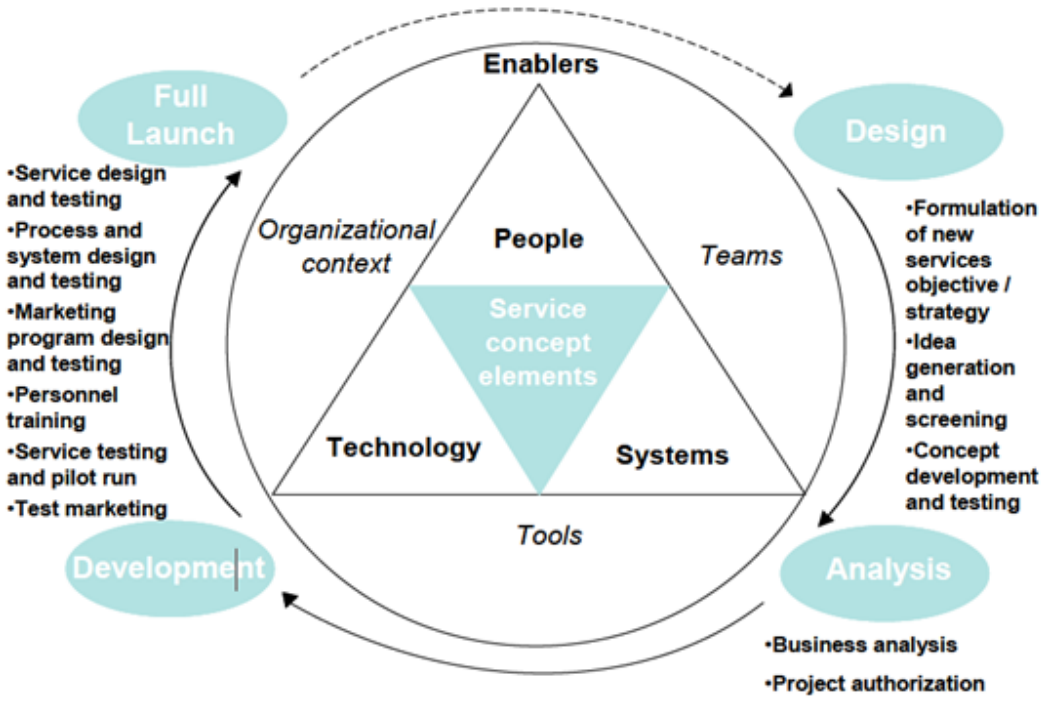


Figure 3. linear and parallel model, Alam & Perry (2002)

include the formation of a cross-functional team is considered as a stage. The role of the customer in these two modes is mentioned in this research, though not in an exhaustive manner. The customer input appears to be the most important at the idea generation, service design and service testing stages. The customer inputs are obtained through strategies like meetings, observing, and interviews at various stages in the process.

As described by Alam & Perry (2002) and Menor et al. (2002), the NSD process is non-linear, iterative and including overlapping phases and cross-functional co-operation. The NSD process cycle model that addresses these aspects were presented by Johnson et al. (2000) and adapted by Menor et al. (2002). See Figure 4. The NSD process cycle represents a progression of design, analysis, development, and full launch, which exists in a highly iterative and no-linear manner. It also recognizes that the NSD stages revolve around the service concept elements that are enabled by the resources such as Teams and Tools.

Figure 4. NSD process cycle mode Johnson et al. (2000), Menor et al. (2002)



In this thesis work the author is mainly interested in presenting service design models that are extracted from wide range of design practices in industry. The double diamond model developed by the Design Council based on research in eleven leading design companies (Design Council 2007). See figure 5.These eleven companies' offering varies from pure products (e.g. Alessi), through hybrid of product and service (e.g. Starbucks and Sony), to pure service (e.g. Virgin Atlantic Airways and Yahoo!) offering. This highly abstract model is used to illustrate the similarities and shared approaches in design process. The double diamond model divides the design process into four distinct phases: discover, define, develop and deliver. It maps the divergent and convergent of different stages, showing the different modes of thinking that designers use in practice. Discover refers to an initial idea or inspiration, often sourced from a discovery phase in

which user needs are identified, which is first quarter of the double diamond model. The second quarter is the definition stage, in which interpretation and alignment of these needs to business objectives is achieved. Design-led solutions are developed, iterated and tested within the company in the develop stage. In the last quarter, the resulting product or service is finalized and launched in the relevant market. Due to its abstractness that enables to potentially fit various design fields, this model is applied through this thesis when presenting the design process of Siteknows project. It is also utilized as a way to characterize user involvement techniques.

Figure 5. Double diamond model, Design Council (2007)

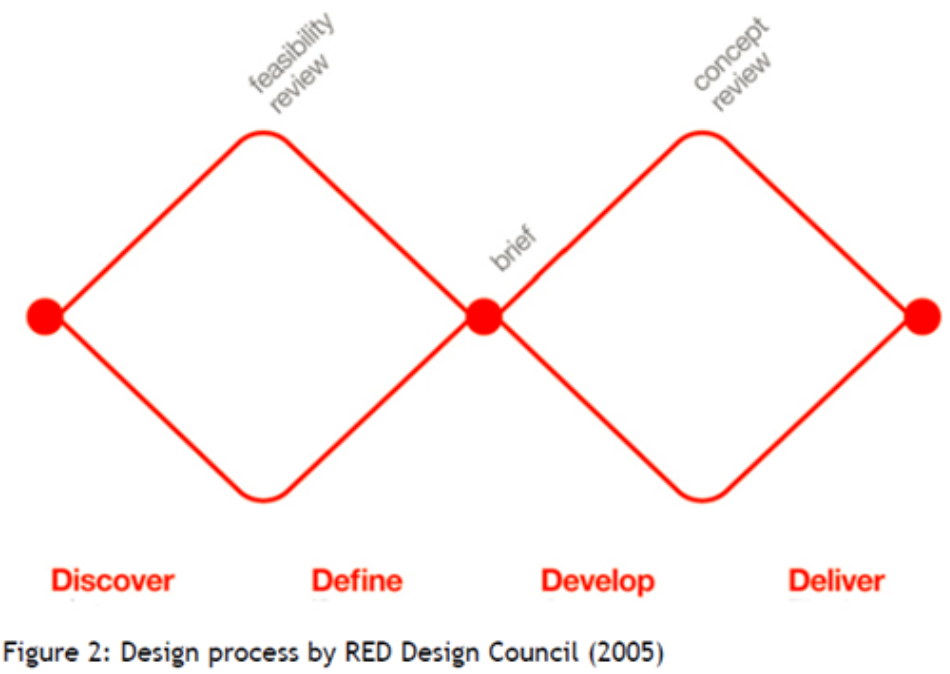


Figure 2: Design process by RED Design Council (2005)

To summarize, despite the differences of goods and service, in some of NSD models, the NSD process contains similar phases as NPD process, from idea generation to launch. There are models that suit to describe the process of both service design and NPD process, e.g.double diamond model developed by Design Council (2007). However, some of NDP process models, e.g. linear and parallel model of NSD developed by Alam & Perry (2002), contain more phases than NPD process model, which are the extensions or additions to the stages of basic product development models.

3.5 User involvement in theories of service design

There is no unified definition of user involvement. User involvement can be seen to be a general term describing direct contact with users and covering many approaches. To be more specific

in new service development (NSD) process, user involvement refers to the methods and processes used to gather and analyze user-data, as well as to integrate user-data into NSD process (Kaasinen et al. 2010, p 3). It is also an indispensable issue of NSD. The foundation of user involvement in NSD could be found in three different research viewpoints: marketing and business research, human-centered design (HCD) and media research (Kaasinen et al. 2010, p 3). In the next section, the author attempts to examine existing research from HCD perspective to find out which kind of knowledge of user involvement that has been presented in different aspects of HCD. There are various aspects may be found in the research of HCD. In this thesis, the author are mainly focusing on describing six aspects that are most relevent to user involvement. These are Usability and Experience, Participatory design, Ethnographic fieldwork, Contextual design, Co-design, and Agile design. In the part of literature review, the author attempts to focus on different stresses and perspectives in dealing with user of each specific aspect, as well as implementations in service design field. After this session, a series of techniques will be found out in these theoretical aspects, and will be categorized by different characteristics, in order to provide an indication for implementing these techniques in practice.

3.5.1 Usability and user experience

Considering users as a resource to test the service concept or service prototype and launched service, is often mentioned in new service development (NSD) and HCD literatures (e.g. Alam & Perry 2002, Gasson, 2003, Kujala 2003). Usability and user experience are the main fields that refers to testing in HCD theory, but they have different emphasis.

Using user as a resource to evaluate is an essential part of both usability and user experience evaluation. In an iterative HCD process, first the users' needs and usability or user experience objectives are defined as the requirements of design. Based on these requirements, alternative design solutions are conceptualized. Next the design solutions are developed further in the form of prototype. For further improvement, it needs to be evaluated by users to verify whether it meets the original requirements. Last the feedbacks are used for the next loop of development. (Yvonne et al. 2011) This process is supported by usability and user experience evaluation methods that support to gather targeted data from users. By implementing these methods the design teams are able to deal with the issues such as selecting the best design, ensuring that the development is on the right track, and assessing if the outcomes meets original objects (Vermeeren et al. 2010).

In addition, usability and user experience have different stresses. The standard of the ISO (International Standardization Organization) defines usability as "Extent to which a product can be used by specified users to achieve specified goals with effectiveness, efficiency and satisfaction in a specified context of use." (ISO 1998) While more recently, user experience has been increasingly stressed in addition to usability's emphasis on functionality and performance in HCD (e.g. Forlizzi & Battarbee, 2004, Hassenzahl & Tractinsky 2006). ISO standard defines user experience as: "a

person's perceptions and responses that result from the use and/or anticipated use of a product, system or service." (ISO 2010) According to Vermeeren et al. (2010), usability tests tend to focus on task performance, whereas user experience focuses on lived experiences that are something evaluable not only during the interaction with the products or service, but also before and after the interaction.

Concerning the implementation of the specific aspect in service design field, Vermeeren et al. (2010) collected 96 user experience evaluation methods from both academia and industry. The analysis result shows the existing level of user involvement as employing users to evaluate and to test. It indicates that the majority of these methods involve users as the information provider of user experience. More specifically, 80 percent of the methods are with specific selection of users, 33 percent with random choice of users, and 17 percent user group. Because of the evaluative nature, in another words it needs to provide users using experience, the majority of the methods are for evaluating fully functional product (81 percent) and Functional prototypes (79 percent). Only 25 percent of the methods deals with the conceptual design ideas in the very early phases of the design process. Moreover, even though it identifies 81 percent of the methods that can be applied to web services design, it should be noticed that the focus of this research is user experience evaluation for product design.

3.5.2 Participatory design

Participatory design methods originated in Scandinavia in the 1970s and 1980s, as a the result of number of design practices involving workers to design computer systems. The focus was workplace democracy and union involvement in the development process. After these practices numbers of approaches and techniques, such as contextual design and co-design, were produced as the ramification of participatory design. (Spinuzzi 2005)

From seeing the role of researcher and designer distinct to user, participatory design recognizes how all people are able to contribute to the design process (Sanders 2002). In participatory design, end-users are seen as experts who are doing some specific work, so that they can bring their knowledge and their skills into the development process. Moreover, according to Spinuzzi (2005) participatory design could be defined as "a research methodology, characterizing it as a way to understand knowledge by doing." Therefore, the purpose of participatory design could be understood as enabling end-users and designers to jointly create a tool that has a better performance for user's work (Steen et al. 2011).

According to Spinuzzi (2005), participatory design can be conducted in different stages of design process with different forms. In the stage of initial exploration of work, designers meet the users and jointly familiarize themselves with the working manner of users. In discovery process stage, designers and users clarify the users' goals and values and to agree on the desired outcome of

the project. Lastly, in the prototyping stage, designers and users iteratively shape technological artifacts to fit into the workplace envisioned in previous stage. This could be seen as an abstract process of participatory design.

Participatory design theory and its methods have been implemented in wide range of areas. Recently, service design has become an important theme of participatory design (e.g. Sangiorgi & Clark 2004, Blomkvist et al. 2012), and there are vast number of successful cases of the implementation of participatory design in service design. For instance, Sangiorgi & Clark (2004) present an attempt of utilizing participatory design with industrial partners, which is based on the assumption that the design of successful services depends upon a holistic and participatory approach.

3.5.3 Ethnographic fieldwork

Ethnography was developed originally within the human science disciplines of anthropology and sociology. The ethnographic fieldwork in HCD field refers to researchers and designers going into the field of users to have a better understanding of potential users. The methods of ethnographic research are varying from verbal to visual, from observation to involvement. (Segelström et al. 2009)

Ethnographic fieldwork provides a special perspective to understand users. Blomberg et al. (1993) provide four guiding principles of ethnography: natural settings, holism, descriptive, and members' point of view. Natural settings means the commitment to study the activities of people in their everyday settings in order to understand users by encounter. Holism refers to understanding particular behaviors in a larger social context. Descriptive empathizes the nonjudgmental stance of ethnographers, which is referred to "the notion that other people's behaviors should not be judged by the standards of some other group." Members' point of view is an orientation of getting close to an insider's view of the context, which helps ethnographers to describe behaviors of study participants in a relevant and meaningful way. These four principles could help to understand the perspective of ethnographic fieldwork in terms of the way of gathering data and the notion of forming research outcome. According to Blomberg et al. (1993) and Segelström et al. (2009), in order to adapt ethnographic methods in design process, it is important to develop elaborate documentations that are usually in the form of visualization tools, for presentation of the research outcome. Moreover it is required to have designers involved in the field work process to better interpret insights resulting from the fieldwork.

The methods of ethnographic fieldwork could serve various fields. As an example, in the computer supported cooperative work field, Simonsen & Kensing (1997) point out the benefits of implementation of ethnographic fieldwork. They primarily use ethnographic observations and interviews within a particular organization. It helps to form a shared understanding of current work practice

and in developing realistic vision of future use of computers, moreover it has the potential to unveil users' multiple viewpoints on the current work as well as on future use of computers.

In addition to traditional area of design, like product design and software design, ethnographic methods are able to serve the service design. Segelström et al. (2009) identify three areas that ethnographic methods could be used for service design: helping to empathize the futures users of the service by bring people from the team into the field, using story-telling, defining personas; inspiring idea generation by collecting rich data material and not cleaning out ambiguity or reducing abundance, involving and engaging users; and helping provide evidence for the concepts that have been developed by presenting documents of possible service performance futures, engaging stakeholders.

3.5.4 Contextual design

In addition to the emphasis on the understanding users in the field, contextual design is more about an integrated design process than pure ethnographic research. Holtzblatt & Beyer (2013) define Contextual design as:

> "a structured, well-defined user-centered design process that provides methods to collect data about users in the field, interpret and consolidate that data in a structured way, use the data to create and prototype product and service concepts, and iteratively test and refine those concepts with users."

One of the principles of contextual design is that "people are experts at what they do, but are unable to articulate their own work practice (Holtzblatt & Beyer 2013)." Contextual design emphasizes active interviews additional to pure ethnographic observations, which involves users in discussion and reflection on their own actions, intents, and values. It is encouraged to actively ask questions and suggest interpretations of the user's actions and motivations.

Additionally, contextual design places emphasis on methods that assist designing coherently. It provides structured desgin processes from gethering data to presenting final solutions, which consist of different design tools. The design tools could often be for example the storyboards that provide coherence of task, and the user environment design that ensures structural coherence across the system. These methods from contextual design help to concrete representations in order to maintain system coherence. (Holtzblatt & Beyer 2013)

Contextual design has primarily been used for the design of computer information and IT systems, including hardware and software. Contextual design has also been used in wide range of other industries, for example web applications, process re-engineering, consumer product design, manufacturing, and automotive and medical device design etc. (Holtzblatt & Beyer 2013). There are

numbers of examples of using contextual design techniques in service design. For example Kurti et al. (2006) implement contextual design techniques in MUSIS project. This project was designed to explore, identify and develop some innovative mobile services with rich multimedia content, which are distributed over wireless networks specificly in university campuses. Contextual design is useful in circumstances where content and services should be designed for supporting tasks in a specific new situations

3.5.5 Co-design

The original assumption of participatory design is that end-users provides tacit knowledge developed and used by those who work with technologies (Spinuzzi 2005). Accordingly, it might be difficult to apply participatory design approach for innovation, since innovation may be new to the firm, or new to the customers. However, co-design can be thought of as a sub-discipline of participatory design that has also been developed to take advantage of users' creativity. Co-design drawn its roots from user-centered design and participatory design for several decades (Sanders & Stappers 2008). Together with co-design, the term co-creation is used in the collective acts of creativity. Co-creation has been defined as any act of collective creativity shared by two or more people(Sanders & Stappers 2008). It has a wide range of applications, for example "from physical to the metaphysical and from the material to the spiritual(Sanders & Stappers 2008)". Moreover, in terms of more focusing on creative cooperation during design process, Steen et al. (2011) demonstrate a concise definition of co-design:

> "In co-design, diverse experts come together, such as researchers, designers or developers, and (potential) customers and users- who are also experts, that is 'experts of their experience'- to cooperate creatively".

Sanders (2002) distinguishes three tools to interact with users during a commen design process, the "say", the "do", and the "make". According to her, traditional design research methods that are considered focusing on observational research address the "do" (i.e. looking at what people do and use), while traditional market research methods through focus groups, interviews, and questionnaires focus on the "say". In Sanders' model, the "make tools" are a new language for co-design, which connects the thoughts and ideas of people from different disciplines and perspectives. Noticeably, the "make tool" as a new language for co-design addresses the latent needs of future users.

In addition to participatory design's viewpoint that user can offer their knowledge or skills in design process, co-design focuses on collective creation together with people who have a stake in the process by using generative methods. Therefore, users including end users and client/beneficiary can play co-creating roles throughout the co-design process where these users play important roles in knowledge development, idea generation and concept development. (Sanders

& Stappers 2008)

Steen et al. (2011) place special attention to user involvement that are in the co-design manner, in order to see the benefits of co-design in service design projects. Among the benefits for the service design project are improving the creative process, developing better service definitions, organizing the project more efficiently, and improving customer's or users' loyalty.

3.5.6 Agile design

Agile design methods first appeared in software development field. they were conceived as a way to balance technical system design interests with an understanding of user requirements. Agile refers to the ability to react rapidly to changes in the environment which often are the ever-changing user requirements. Design is the process of transforming a set of potentially ill-defined customer requirement into a product or service. Therefore, agile design methods emphasize an adaptive approach to defining system goals and requirements along with the design process (Gasson 2003, Matthews et al. 2006).

In the book Agile Service Development , Lankhorst (2012) introduces three common agile methods in software development: Extreme Programming, Dynamic Systems Development Method, and Scrum. He also takes a further step and proposes to adopt agile approaches for service development teams so as to tailor the way of working to specific circumstances, deal with the issues like multiple perspectives of stakeholders, bottom-up innovation,and co-evolution of different service aspects. According to Lankhorst (2012), agile design methods provide a new perspective on the service design process:

> "The iterative character of agile processes, with a focus on people and interactions, close contact with customers, and cross-functional teams that tackle different aspects of development at the same time, is a much better fit with the complex and multidimensional nature of service development."

Furthermore, the characters of agile methods can be summarized as short iterations, close customer contact, continuous adaptation, self-organization, and cross-functional teams (Lankhorst 2012). Close customer contact is one characteristic of agile design that emphasizes the importance of user involvement in service development process. However, different from other aspects of human-centered design (HCD), managing user input within a multi-disciplinary or cross-functional team throughout the development process is the focus of agile design methods, in terms of user involvement. For example, Miller (2005) points out that agile design helps to maximize the quantity and impact of customer input, which is realized through designers working in a parallel and highly connected track alongside of the developers.

To summarize, the nature of all these aspects of human-centered design (HCD) is to implement

Aspects	Purpose	Focus
Usability& Experience	Using users to test design ideas, concept and prototypes	Emphasis on evaluation
Participatory design	Users and designers jointly developing the design	Emphasis on getting knowledge from users by doing
Ethnographic fieldwork	Going into the field of users to have a better understanding of potential users;	Emphasis on a current situation
Contextual design	Collecting data about users in the field and interpret and consolidate that data in a structured way;	Emphasis on the integrated design process
Co-design	Enabling collective creativity in design process	Emphasis on generative methods discovre-ring opportunities and future situation
Agile design	Reacting rapidly to changes in the environ-ment and users' needs	Emphasis on managing user input within multi-diciplinary team

Figure 6. Purposes and emphasizes of different aspects in HCD

design approaches to gather data from user and translates them into design outcomes. They provide different perspectives to see the design objects and different methods to treat users. Therefore the relevant outcomes are different. Considering the implementation of methods in these theoretical aspects, Steen et al. (2011) suggests that to choose a method which is appropriate for a specific project, the selection should be based on whose knowledge and which knowledge the project team wishes to pursue. Moreover,they are usually mixed both in theoretical work and design practice. For example, McDonald et al. (2006) argue that field evaluation methods reveal a broad and very different range of problems that could not be achieved through lab-testing , and provide a better basis for understanding the causes of usability problems. The purposes and focuses of user involvement in different aspects could be summarized as Figure 6:

3.6 User involvement techniques analysis

The author has collected 18 user involvement techniques appeared in the research of the six different theoretical aspects. See Figure 7. To have a better understanding of these techniques, the author suggests few characteristics to classify these techniques. These characteristics are purpose, related theoretical aspects, and implemented design stage.

In terms of describing the intentions of each technique in its implementation context, three purpose categories are proposed: Informative, supportive, and evaluative. Informative refers to what to design, in other word the techniques in this category are used to gain information from user to define design objectives. Supportive refers to how to design, namely the techniques in this category are used as tools transferring insight into design solutions and supporting other design

activities. Evaluative refers to how is the design, namely the techniques in this category are used to evaluate design output.

The related theoretical aspects are usability& experience, participatory design, ethnographic field-work, contextual design, co-design, and agile design in question.

The design stages are from the double diamond model developed by the Design Council, which is presented in previous process of service design session. The different four stages are discover, define, develop, and delivery.

The purpose of using these techniques in corresponding research are various from informative to evaluative. But none of them can solve all the problems and challenges in a design process, meaning there is no single technique that can answer all the questions of what to design, how to design, and how is the design. A number of them have more than one intention, for example Fox et al. (2008) refers that contextual inquiry was used at the initial stage to establish design objec-tives, and then was used in the interactive stage for verification of design features.

These theoretical aspects refer to various areas of user involvement in the design process. Numbers of researches mainly introduce how a user involvement technique was implemented to achieve the goals that is supposed to be covered from a specific theoretical perspective. For example, Miller (2005) introduces the parallel agile design methods and demonstrates the positive results of implementation this technique, in order to show the benefit of managing user input by agile design. Meanwhile, numbers of researches apply more than one user involvement technique in the design process. For example, Steen et al. (2011) mentioned the applications of customer journey map technique in the case study, which helped the purpose of demonstrating the benefits of co-design in service design project.

Some of the techniques are applied in more than one theoretical aspects. For example the cus-tomer journey map appear in both Steen et al. (2011)’s and Segelström et al. (2009)’s research, which respectively address the two different aspects of co-design and the ethnographic fieldwork.

Most of the technique are used in a certain period of the design process. However the cus-tomer journey map and the HCD agile method are reported to be used through the whole design process. In addition to Steen et al. (2011)’s statement, the author argues that the besides consid-ering the knowledge that the project team wish to gain, the project development stage should also be considered to select a appropriate method for a specific project.

Figure 7. User involvement techniques

	Design Stage				Resource
xtual ign	Co-design	Agile Design	Discover	Define	Develop	Delivery	
			■	■			Morelli, 2007
					■	■	User Interface Design GmbH, 2013
				■	■		Gegner & Runonen, 2012
	■		■	■			Segelström, et al., 2009 Spinuzzi, 2005
			■	■			Stickdorn & Schneider, 2011
		■	■	■	■		Holtzblatt & Beyer, 2013 Fox, et al., 2008
	■		■	■	■	■	Koning, 2010 Steen, et al., 2011
	■				■		Als, et al., 2005
	■		■				Gaver, et al., 1999
	■			■			Tassi, 2009
					■	■	Tahti & Arhippainen, 2004
	■			■			Greenberg, et al., 2006
						■	Zuk, et al., 2006
			■				Segelström, et al., 2009
				■			Design Council, 2013
						■	Brooks & Quesenbery, 2010
	■			■		■	Holtzblatt & Beyer, 2013
		■	■	■	■	■	Sy, 2007 Fox, et al., 2008

3.7 User involvement techniques & service concept representation techniques in the empirical study

3.7.1 Contextual interview

Contextual interview is an ethnographic technique that allows interviewers to observe and probe the behaviors of users in the environment or context of the service (Stickdorn & Schneider 2011). Different from traditional question and answer interviews, contextual interview observes users as they work and inquiries into the users' actions as they tend to explain the reasons and motivations. The discussion in the interview helps to understand the working context in an active manner. (Holtzblatt & Beyer 2013)

Holtzblatt et al. (2005a) introduces the key aspects that should be considered when conducting a contextual interview. First the interviewer should choose the right people to talk with. The elements of the working context, such as job role, work group, job title should be considered in order to form a good cross-section of the target user population with a small number of participants. Following identification of two to three contexts that matter to the service process, and balancing job roles within context are suggested. Another two important aspects are the style of interview and the logistics (the practical issues that helps a smooth interview) of interview. Last numbers of strategies to reach participants are suggested, for example the work through vendors and sales that have the direct contact with customers.

According to Stickdorn & Schneider (2011), among the benefits of conducting an interview contextual is that it helps to capture specific details that often get lost in a traditional focus group setting. This might be because that people are more likely to offer insights of their thoughts and behavior as they are in a more comfortable and familiar environment. As a user involvement technique used for service design, contextual interview allow researchers to form an understanding of the social context and physical environment of the service, which could help form a holistic understanding of the service. The findings of contextual interviews are often interpreted and framed with the help of other techniques, for example personas (Holtzblatt et al. 2005a, Stickdorn & Schneider 2011), in order to provide communication tools that help translate findings into design outcomes.

3.7.2 Personas and storyboards

Cooper (2003) clarifies the history and origin of personas that is first created by him in 1998 as

a practical interaction design tool in software industry. Abstractly, personas are descriptions of fictional users, which are based on assumptions or data. A vast number of articles about using personas have been written, but the understanding of the usage of this technique and definition of a persona are various. Nielsen (2013) offers four different perspectives regarding personas:

1) The goal-directed perspective: In this perspective the users' (work) goals are the focus of the persona descriptions, e.g. work-flow, contexts, and attitudes. The benefit of the method is that it provides a focused design and a communication tool to finish discussions.
2) The role-based perspective: The role-based perspective focuses on the users' roles in the organization, and the persona description is clearly related to both qualitative and quantitative source. The advantage of using the method is a greater sense of involvement and a better understanding of reality will be created.
3) The engaging perspective: This perspective is rooted in the ability of stories to produce involvement and insight. "The persona descriptions balance data and knowledge about real applications and fictitious information that is intended to evoke empathy." The advantage of using persona is to help avoid automated thinking.
4) The fiction-based perspective: The personas in this perspective are "often used to explore design and generate discussion and insights in the field."

Detailed or abstract instructions of creating and implementing personas are provided by practitioners and scholars, such as Mulder (2006), Nielsen (2013), Pruitt & Grudin (2003) and Holtzblatt et al. (2005b). The process of creating and implementing personas could be summarized from them: In the first step, collect data from different sources including qualitative and quantitative research, as well as pre-existing knowledge in the organization. In the second step, form a hypothesis based on the first data collection, with a general idea of the user segmentation model. Then, refine user segmentations and gather further data on the determined segments. Following, describe the personas for each user segments with descriptions that express enough understanding and empathy for the readers to understand the users. Last, create scenarios that convey the story about how the persona uses a future product or service.

In terms of using created personas, it is crucial to make the static characters into active characters in different scenarios. In addition to text descriptions of personas, other design techniques for example storyboarding are implemented to maximize the usage of personas. (Stewart et al. 2011,Brooks & Quesenbery 2010) Storyboard is the representation of use cases of a product or service through a series of drawings or pictures that form a narrative sequence. According to Stewart et al. (2011), together with personas, storyboards shows the ability of facilitating the communication of process between designers and users, and between designers and developers. With a combination manner, personas and storyboards are arguably more directly relevant to stakeholders. Therefore, personas and storyboards could be used as a tool that conveys the research results to facilitate the communication internally and with stakeholders.

3.7.3 Co-creative workshop

Co-creative workshop (or co-design workshop) is a method frequently used in service design process rooted in co-design perspective. Continuing with Sander's (2002) three approaches to interacting with users in a design process mentioned above, Sanders & Stappers (2008) suggest:

> "In interviews, one can listen to what other people 'say' and interpret what they express. Through observation, one can watch what other people 'do' and how they use products or services. Moreover in creative workshops, people can jointly explore and articulate their latent needs and jointly explore and 'make' solutions. The key benefit of such 'make' or co-design approaches is that they help to organize joint creativity."

Co-creative workshop is seen as a generative approach to accessing end-users' unspoken feelings and ideas, by having users to make artifacts such as maps, diagrams of relationships, and flowcharts of processes. The forms of co-creative workshop are various, and a number of tools from co-design workshop are available for organizing a co-creative workshop.

Product Development project in 6 hours (PD6) workshop is a co-creative tool developed by Future Lab of Product Design research (FLPD) and adopted by international and interdisciplinary Product Development Project (PDP) course of Aalto University. PD6 is designed as a tool for intensifying interdisciplinary projects and creating a common language among team members and between project stakeholders faster. Prototyping and hands-on activities are the core issues of PD6, which is in line with the point of co-creative methods that explore and articulate future needs by the "make". During PD6 workshop, project teams need to deal with different issues of product development project, such as idea generation, team building, controlling fuzzy early phase of product design project, in a non-linear manner. This meets the initial intention to "enable the simulation and intensification of the early and fuzzy phase of product design and to give a structured method to handle this phase." In addition to its educational function, it can be used as a tool for intensifying the team building process in educational contexts in addition to industrial, and could be modified according to diverse needs. (Reinikainen & Björklund 2008)

3.7.4 Anticipated experience evaluation (AXE)

Anticipated experience evaluation (AXE) is a relatively new qualitative method that provides an initial perspective on the user experience for a product or a service, in early development stage. Inspired by Attrakdiff (User Interface Design GmbH 2013) method, Gegner and Runonen (2012) developed a new method for evaluating early product or service concepts with users, which is considered both an evaluative method and a method for collecting suggestions for improvement. It is conducted with individual users through interviews and is considered a qualitative method. The main sessions of this method are concept briefing, concept evaluation, and data analysis. A

remarkable feature of this method is the usage of visual stimuli. It enables participants to imagine using scenarios and helps to reveal their attitudes, emotions, as well as valuations.

3.7.5 Service system map

Service system map is a visual representation of the various actors involved and their mutual links in a particular service. In addition to the stakeholder map's presentation of the different actors, in service system map their mutual links and the flows of materials, energy, information and money through the system could be demonstrated. (Tassi 2009)

Morelli (2006) proposes three main categories of tools and methods in the new operative paradigm to generate new product service system: 1) The analysis and interpretation of the context; 2) The development of the system; and 3) The representation and communication of the solution. Morelli (2007) emphasizes the importance of the representation and communication techniques for designers. When dealing the product service system, more actors such as producers, service providers, and final users are involved in addition to traditional technical actors. Further, the nature of solution is more complex, often consists of immaterial component. He also presents the 'system platforms' tool that consists of logically structured modular components, for designers to represent the outcome of the collaboration among actors. Morelli (2006) also points out that "the final outcome of a design intervention is likely to consist of semi-finished solutions", which means that this tool could be used as a tool of communication in the negotiation process as well as in the earliest phases of concept development.

3.7.6 Customer journey map

The customer journey map is well explored in service design literatures, but the exact definition of customer journey map is based on the various context. The core of most customer journey map definitions is customer or user orientation. Richardson (2010) for example proposes a consistently useful framework that includes of the actions, motivations, questions, and barriers in a service process. Steen et al. (2011) introduce the method of mapping the interactions on the touch-points and personalizing the map. Touch-points are the contacts between service provider and their customers, including material artifacts, environments, interpersonal encounters, and more. Personalizing means incorporating photographs along with personal quotes and commentaries, form a customer perspective.

Kalbach (2010) summarizes the typical elements of customer journey map could include: 1) the customer actions, usually broken into chronological phases of some kind; 2) goals and needs at each step in the process; 3) moments of truth, or areas of particular importance in the overall

customer experience; 4) pain points, gaps and disconnects in service; 5) brand impact, satisfaction, and emotional responses; 6) business touch-points and process, including roles, systems and departments of the provider; 7) existing services and opportunities for improvement.

As a user involvement technique, the customer journey map is used to understand actual experiences and the service journey of a service user. It is also used to identify key areas that can improve their experience. Through processes such as 1) Measure; 2) Experience; and 3) Improve, Steen, et al. (2011) used this method to not only investigate but also improve the customers' experiences in a co-design process.

According to Stickdorn & Schneider (2011) for designing a new service concept, the customer journey map might help to provide a structured visualization of a service user's experience. A customer journey map is often constructed by an engaging story of user's interactions with the touch-points of the service. As a service design tool, customer journey map has also been incorporated with other service design methodologies, making it an even more involved user-focused experience.

In this thesis work, the customer journey map is used as a 'supportive user involvement technique' (see page 34) that helps demonstrate findings of other research methods. The customer journey map allows to elaboratively discuss problems and opportunities for innovation. It is a service concept representation tool that specifies the customer experience of the new service.

3.7.7 Service Blueprint

Service blueprint was introduced by Shostack (1984), and has become a widely used technique in service design. Similar to customer journey map, service blueprint also emphasizes on the service process. In addition to presenting the perceived touch-points and interactions, the service blueprint should also show the parts of the service process that customers cannot see. Bitner et al. (2008) defines the five components of a typical service blueprint: 1) customer actions; 2) on-stage / visible contact employee actions; 3)backstage / invisible contact employee actions; 4) support process; and 5) physical evidence. Customer actions include all of the stages that customers take in the service delivery process. On-stage / visible contact employee actions describes face-to-face interactions. The next significant component is the backstage / invisible contact employee actions that support the interaction with customers but below the visibility line. The support process is separated from contact employees by the internal line of interaction, which describes other individuals and units involved in the service. Finally the physical evidences are the tangibles that customers can perceive directly.

According to Stickdorn & Schneider (2011), as a service design technique, the service blueprint promotes co-operations and teamworks, as well as helps to co-ordinate the people and

resources. The blue print is often in a form of a draft in the early stage of a service design project, which enables the exploration of different aspects. The collaboration processes of service blueprint creation are emphasized, meaning various departments, or teams, which may exist within the organization of the service provider should be involved in the creation process. It is necessary to continually reflect the changes of the environment and users' preferences on the blueprint. In the implementation stage, the blueprint can be a clear road-map for the actual service delivery, by containing detailed descriptions of the service system.

3.8 Summary of literature review.

To summarize this chapter, systemic application of design methods could be a way to develop a new digital service. In a new service development process, the service concept is often used to present the customer benefit or value, and the customer perceived experience, also the components of a service system. It conveys a shared understanding and drives design decisions. For designing a new service, the various classifications with different characteristics of service innovation should be considered to understand the newness of the service and corresponding strategy. The nature of new service development process (NSD) appears to contain similar phases as new product development process (NSD), from idea generation to launch. In terms of processing data from user in a service design process, human-centered design (HCD) provides various lenses and methods to treat users and data gathered. When choosing an appropriate method for a specific project, it is important to consider not only what kind of knowledge, but also whose knowledge should be gained in which stage of a project.

04

DESIGNING A NEW SERVICE CONCEPT FOR CULTURAL INSTITUTIONS VISITORS

This chapter presents the stages of Siteknows project. It describes service concept designing process from understanding of the design context to conceptualizing service system. The focus of the presentation of the process is describing how the project team gathers and uses user data. According to the double diamond model (see page 27), the corresponding user involvement techniques are implemented through the process and are elaborated in the sequence of discover, define, develop and deliver.

4.1 Discover

In the discover stage, the goal is to broaden project team’s perspectives to allow for a wide range

of ideas and unrevealed opportunities. Contextual Interviews are implemented as an informative user involvement technique (see page 34) to understand the current situation of museum visiting from a service oriented perspective. Touch-points and customer experience mapping is utilized to reflect the research result of contextual interview. It is also a supportive technique to transfer insights into design solutions. For example, a PD6 Workshop is organized to explore new possibilities of mobile service for different types of visitors. It is an ‘informative and supportive user involvement technique’ (see page 34) for enabling users to contribute ideas that refer to what to design and possible solutions.

4.1.1 Implementation of contextual interviews

In order to comprehend of customer journey, namely what is expected will happen when a visitor engage in a journey, the project team conducted contextual interviews with Kiasma’s staff and ordinary visitors. These interviews were complemented with other indirect user research. The reason for using contextual interview is that it suggests more natural and more realistic result that can be gathered in a less formal manner than lab tests (Usability.gov 2013).

The contextual interviews were conducted in a relatively natural way. The researchers of the project team observed when visitors have a tour in exhibition halls, and discussed with them after the exhibition. The purpose of this is to understand the activities during visiting journey of visitors, including the stages of decision making, visiting planning, on-site visiting, and post-visiting. The possible activities of each stage and related touch-points of Kiasma museum are questioned and discussed with visitors, to form a picture of the interactions among visitors and existing touch-points.

Moreover, the project team interviewed museum staff, focusing on discovering how they perform in their actual working environment in order to understand how they manage the existing touch-points through the whole museum. The interviewees came from education department of Kiasma museum, which mainly manages the information given to the public. The form of this contextual interview was relatively informal, mostly in the forms of conversations and discussions and conducted in the environment closely related to their jobs, for example their office, Café and lobby of Kiasma. In this way, the interviewees presented more likely to offer better demonstrations and insights behind of their jobs as they are in the real context. When a specific related task is discussed in the office, the interviewee could immediately demonstrate the task with real materials, for instance a specific visitor feedback management interface could be demonstrated, when the process of managing visitor feedbacks is inquired by the project team. Meanwhile, the project team not only observed the activities of the task, but also actively asked questions related to this task. For example, after seeing the interface and understanding the process, the issues such as how are the statistics put to use, and what is used to motivate visitors to give the feedbacks were be discussed.

Figure 8. Touch-point Mapping.

Channels / Stage	Planning	Pre-visiting	Visiting	Post-visiting
Website	Agenda General site exploration Detailed information	Opening hour & entrance fee Map to Kiasma Events detail		Online shop
Mobile			Audio guide	
Communication channel(social media, e-mail, newsletter)	News of events Social media chat			Newsletter Social media chat
Personal &phone calling		Opening hour & entrance fee Guided Tours, reserva-tions	Ticket & Info Guided tour Coffee & shop Other onsite activities	
Non-Kiasma channel	Trip advisor Travel blogs Social Media	Google map Journey planner		Trip advisor Social Media

The outcome of this specific contextual interview consists of two parts: the insights of customer journey of visiting Kiasma museum, and the understanding of the exhibition related public information production process of Kiasma museum staff. The insights of customer journey are presented in the following session by analyzing touch-point and customer experience mapping. A general exhibition related public information production process can be summarized as:

The education department is mainly in charge of this process. An exhibition is usually planned more than half a year before the opening date. At this time the education department gets the general information of the exhibition, and it needs to update the information of this new exhibition on Kiasma's website including a title, a picture that presents the theme of the exhibition, a textual description of the content, and the name list of participant artists. During the time before opening, the education department produces the audio content, which mainly consists of the interviews of participant artists. And the preparation of the textual content for the introduction labels in exhibition halls should be done. Before the opening, it takes approximately one week to do the on-site preparation. In this time slot, the education department needs to adjust the textual content, which depends on the real position of art works. And the social media channels need to be updated. After the opening date, the education department may be responsible for the conversations about the exhibition on different social media channels until it ends.

4.1.2 Touch-point and customer experience mapping

By mapping the existing service touch-points and customer experience of Kiasma museum beyond in-museum or on-site visiting, the project team would have a more holistic view of museum visiting journey. The project team proposed the division of the customer journey into different stages including planning, pre-visiting, visiting, and post-visiting. The planning stage refers to the process of forming a decision to visit one or several cultural institutions. The pre-visiting stage refers to the process of getting information for the determined visiting journey. The visiting stage means the physically visiting period in cultural institutions. Last, the post-visiting refers to the time after the visit, and when some subsequently related activities occur. In different stages, the current touch-point channels are examined and categorized; see figure 8.

For attaining a further understanding of the customer experience of Kiasma museum visiting, the experience mode of four different stages and corresponding opportunities are presented in a graphic manner. See figure 9. First of all, the guiding principles which the project team view the journey are visitors come to Kiasma for its prestige or ever up-dated contents, Kiasma is merely one station of visitors' trip or one institution of visitors' cultural life, and visitors value Kiasma experience respectful and enlightening. To understand the characteristic of the four stages, the types of experience mode are defined as non-linear, no time restrictions; linear process; and non-linear, but time based. Here non-linear, no time restrictions means the activities occur in a way that is spontaneous rather than goal oriented, in an unpredictable period of time. Linear means that corresponding activities occur in a predictable time period with specific goals. Whereas non-linear, but time based refers those activities that are goal oriented and occur in a certain period of time. The features of visitors' activities in different stages are illustrated on the experience map.

Lastly, the potential opportunities of mobile service are suggested for each stage. The mobile experience opportunities for different stages of the customer journey are defined regarding to the current situation and problems: For the planning stage, the possible action to enhance customer experience could be to integrate all the information for the planning stage. For the pre-visiting stage, a seamless information service to support pre-visiting activities could be developed. For the visiting stage, there is an opportunity to provide more intuitive self-guided mobile experience to supplement human guided tour and more on-site interaction functions for visiting stage. In the end, there is an opportunity to provide more detailed online content, which enables interactions among visitors, as well as between visitors and Kiasma.

4.1.3 Implementation of product development project in 6 hours (PD6) workshop

The idea generation and evaluation function is considered the main purpose of the usage of PD6 Workshop. The expected outcome is an exploration of innovative ideas of delivering mobile services for cultural institutions. This relatively new method can be adapted to different needs of the project team. In this context, PD6 workshop is used as a co-creative method to explore new ideas

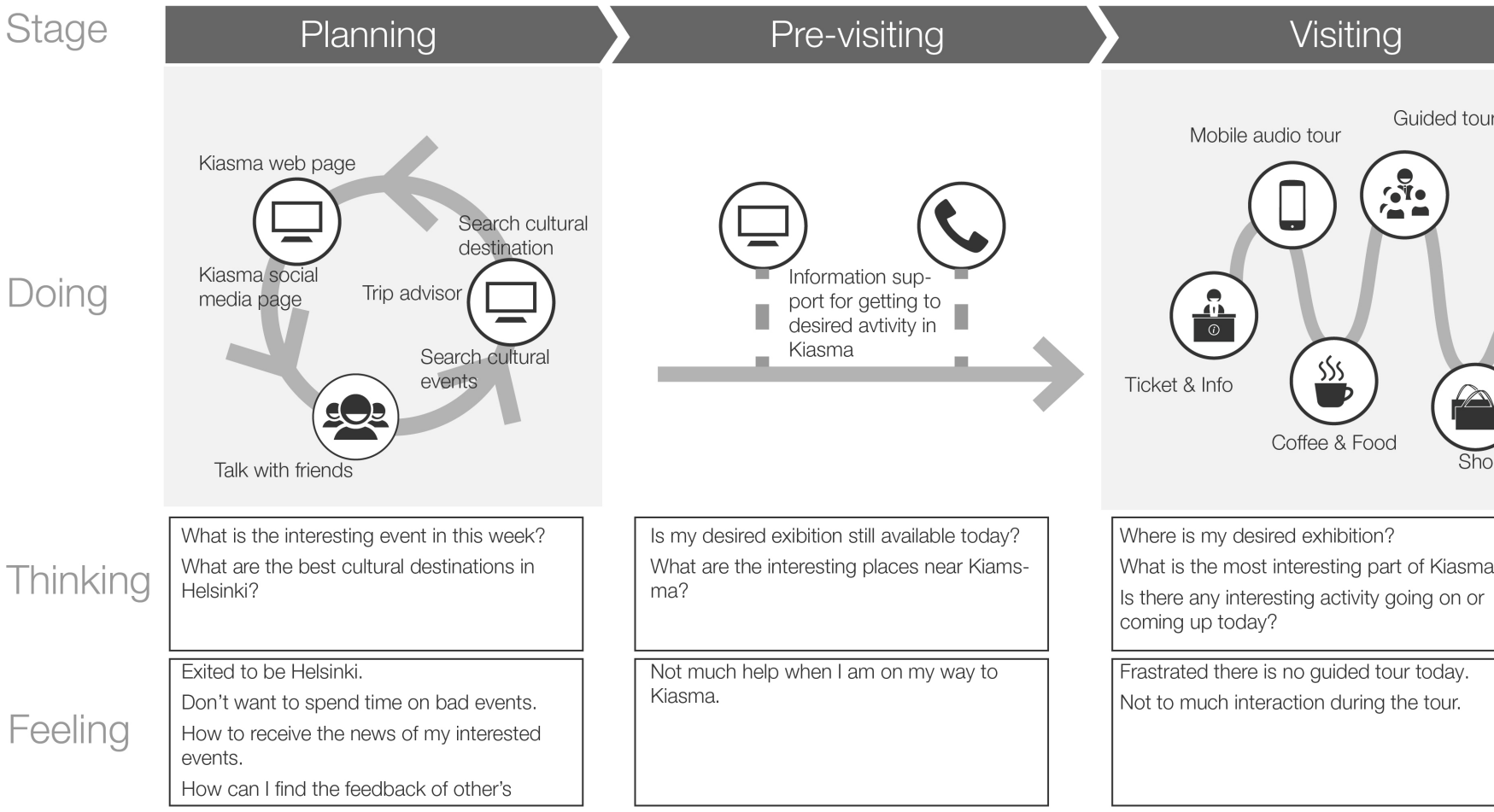
Guiding principles

People come to Kiasma for its prestige or ever up-dated content.

Kiasma is only one station of people's trip, or one place of people's cultural life.

People value Kiasma experienc enlightening.

Customer journey



Mobile service Opportunities

Integrate all the information	Seamless information service	More intuitive mobile guide service to suppl ment human guided tour. Onsite interaction service.

Non-line restricti

and possible solutions with users. Prototyping plays an important role in the process of generating a common language, which enables to explore and articulate future needs of users by the "make" tool (see page 32). Meanwhile the workshop is also an educational workshop for gaining understanding of new product (and new service) development project. The participants are university students who have had at least basic knowledge and skills of new product or new service development project. For the educational purpose, the key issues of new product and new service development project will be mentioned, and the mutual feedback of outcome is also required.

In the six hours workshop, nine master students of Aalto University from different disciplines

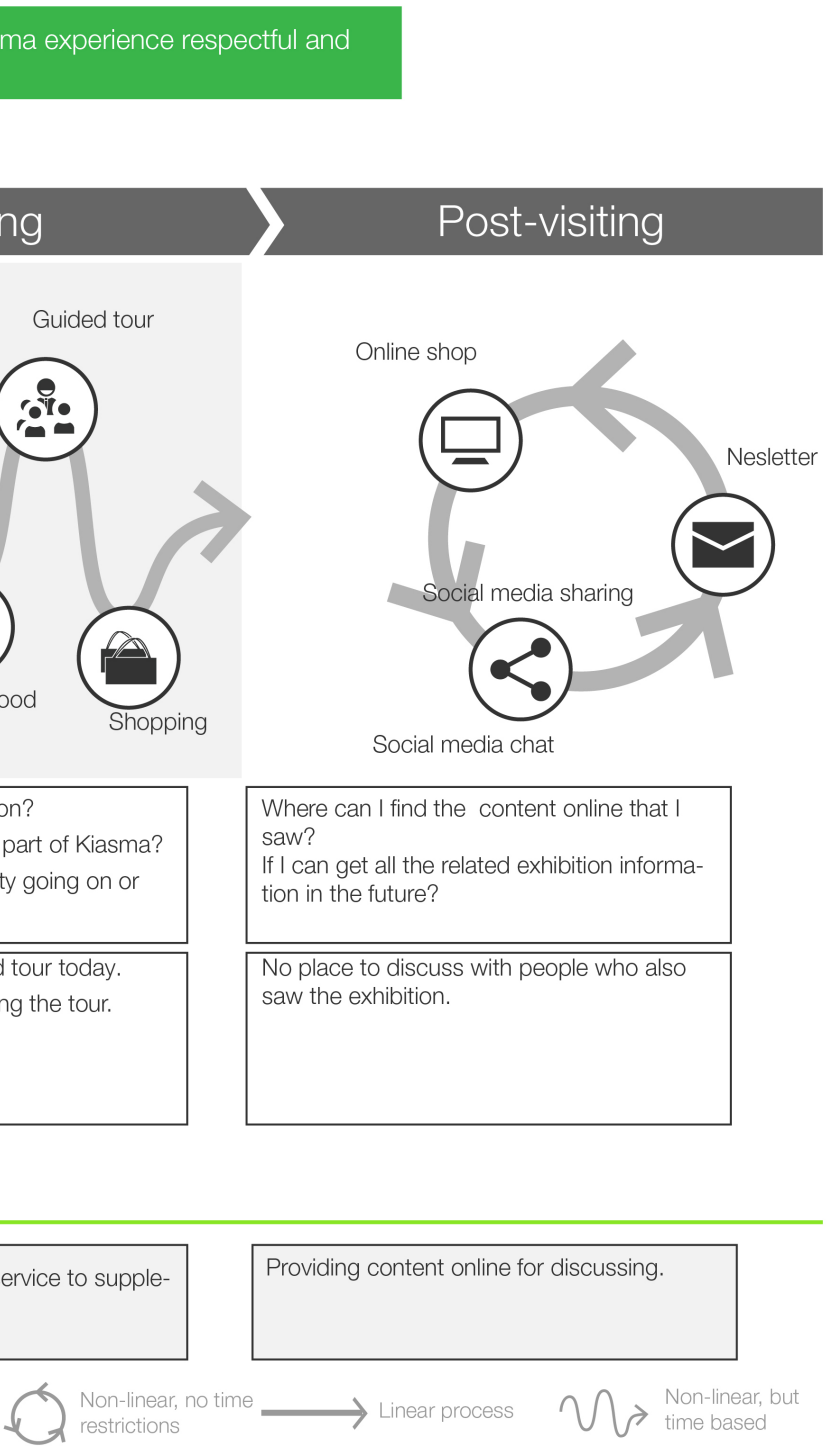


Figure 9. Customer Experience Mapping.

worked within three teams. Each team focused on a special topic on new mobile experience for museum visitors. In the end a hands-on prototype with fifteen minutes presentation for each team were presented as the outcome.

In order to explore the possibilities of mobile service matching various visitor groups with different motivations, the author provided various topics for the three teams. The topics were chosen from the identifications of museum visitors of the research Reconceptualizing the Museum Visitor Experience (Falk 2011). According to Falk (2011), the museum “affordances” are matched up with the visitors’ identity-related needs and desires. Accordingly, he comes up five identifications for

the classification of different motivations of visitors, which are explorers, facilitators, professionals and hobbyists, experience seekers, and rechargers. Each team chose one of identities in question as its target user group to create a new mobile service for this specific group. The definitions of the three chosen identities are described as follow:

Explorers: Visitors are curiosity-driven with a generic interest in the content of the museum. They expect to find something that will grab their attention and fuel their learning.

Professionals and Hobbyists: Visitors feel a close tie between the museum's content and their professional or hobbyist enthusiasm. Their visits are typically motivated by a desire to satisfy a specific content-related objective.

Experience Seekers: Visitors are motivated to visit because they perceive the museum as an important destination. Their satisfaction primarily derives from the mere fact of having "been there and done that."

In the end, after presentations, a collective evaluation was conducted. The concepts and prototypes developed by each team were graded and discussed in the evaluation session. All the teams successfully delivered the required prototypes. Since six hours may be a relatively short time, the forms of the prototypes thus were with low fidelity. Two hands-on prototypes were made by papers and stickers, and the other one was presented in the form of a short video. These three prototypes present three distinctive possible concepts that serve the users who have different motivations, and the highlighting features of these concepts are:

For explorers:
Provide a unique museum experience and will fulfill him or her needs to feel special and encourage him or her to return for more. For example, the manner of organizing delivered information is from a visitor's perspective, rather than from an institution's perspective to publish some information.
Integrate an information distribution platform for cultural events that meets the need of searching interesting events.

For professionals and hobbyists:
Treat professional and hobbyists in a different manner, providing special offer. For example offering these professional people a special identity that can be recognized by other visitors.
Consider these people as content contributors
Deliver the information of upcoming learning opportunities according to a specific interest.

For experience Seekers:
Provide an opportunity to "show off" been there and done that. For example, connecting other social network sites, such as sharing content to Facebook and Twitter.
Provide a route planning function for the tourists.

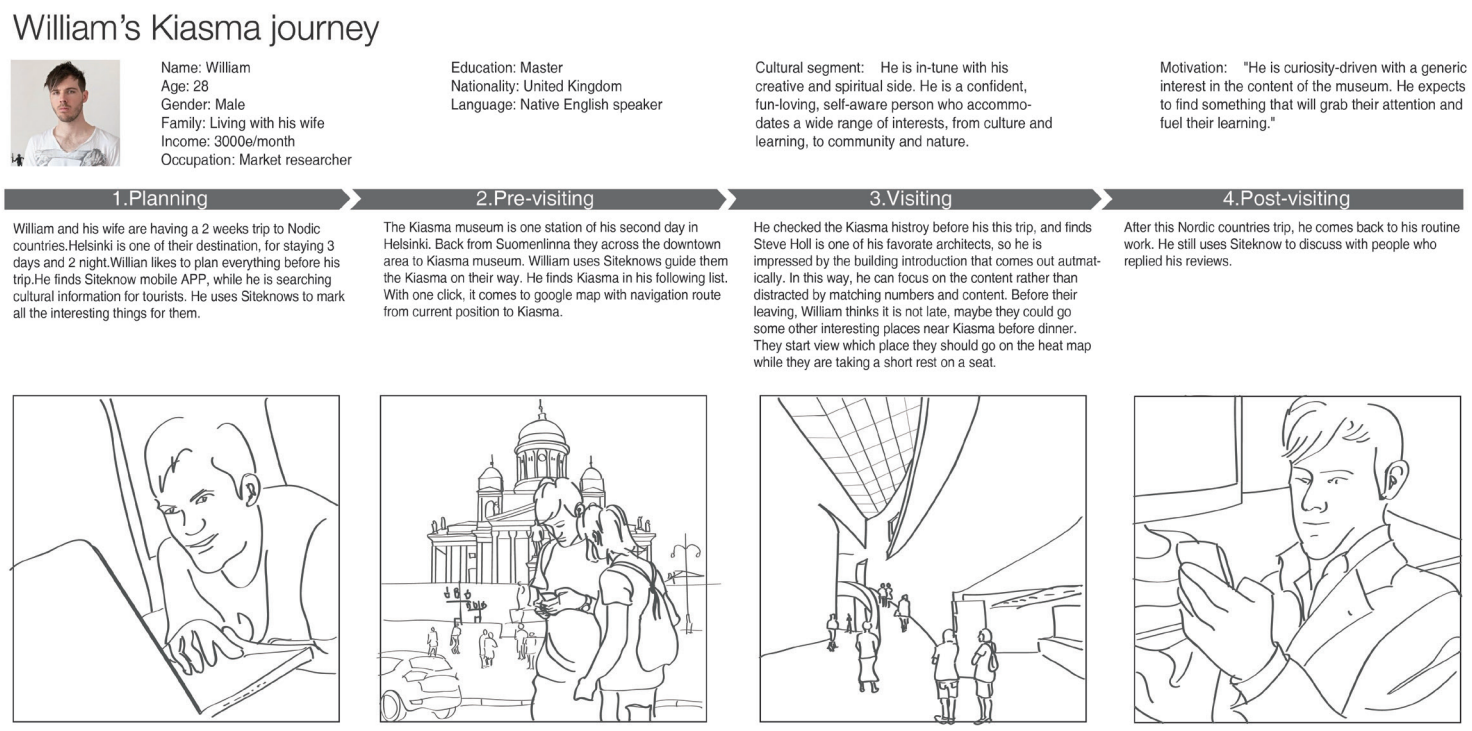
4.2 Define

The define stage should be thought of as a filter where the review, selection and discarding of ideas takes place. The project team has had a more clear understanding of the objectives of the project, as well as some sights to the address the opportunities. In the stage findings from the discover stage are analyzed, defined and refined as problems, and ideas for solutions are pitched and prototyped. Importantly, the research findings will be transferred into design solutions and a basic service concept.

4.2.1 Implementation of personas and storyboards

Personas combined with storyboards were mainly used during this phase. At this stage, the data of previous research results consisting of desk research, field user research work, benchmarking research, and marketing segment research were transferred into an understandable form for generating design solutions. For example, the demographic features, identity related motivations, and cultural segments of the target user group had been defined, the challenge was how to interpret these data into design features. From this data, four personas were created to reflect the research result. The characteristics of the personas consist of demographic profile, cultural segment, motivations, interest/hobbies, internet device, past museum mobile devices and audio guide usage, and sources used to plan museum visit. Based on the characteristics of these four personas, four visiting stories are created. See figure 10.

Figure 10. Personas



Igor's Kiasma journey

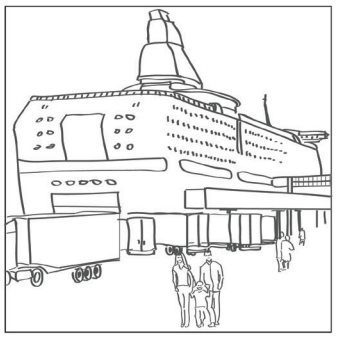
Name: Igor
Age: 39
Gender: Male
Family: Living with his wife and daughter
Income: 2700e/month
Occupation: Senior engineer

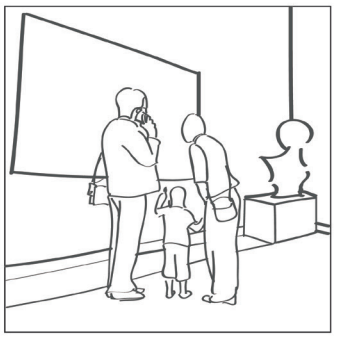
Education: Bachelor
Nationality: Russian
Language: Native Russian speaker, Medium level of English

Cultural segment: He tends to be conventional; the arts are on the periphery of his lives. His occasional forays into culture are usually for spectacular, entertaining or must-see events, and compete against a wide range of other leisure interests.

Motivation: He is motivated to visit because they perceive the museum as an important destination. His satisfaction primarily derives from the mere fact of having "been there and done

1.Planning	2.Pre-visiting	3.Visiting	4.Post-visiting
Igor works at Russian state owned United Shipbuilding Corporation (USC).USC The USC had bought half of Helsinki shipyard in 2010,since then Igor needs to go to Helsinki for short business trip every now and then.	This time he is going to take his entire family having a weekend tour in Helsinki.He knows that Kiasma museum is one of the "must see" places from his local colleague. On the cruise a stuff of information desk suggests them install Siteknows APP to access free selfguide service. He uses it to know the gerneral information and agenda of Kiasma before they arrive.	The pop out interaction form and Russian language choice make the tour experience more enjoyable. Eventhough the little kid can't understand most of the audio and video content, his father Igor can brief the information in a form that the kid understands, which makes Igor feel this tout is a good education chance for his kid.	After visiting, Igor uses Siteknow check other hot places to spend his spare time in Helsinki.





Anna-Marri's Kiasma journey

Name: Anna-Marri
Age: 42
Gender: Female
Family: Living with his husband and son.
Income: 3500e/month
Occupation: Teacher

Education: Doctor
Nationality: Finnish
Language: Native Finish speaker, Professional level of English

Cultural segment: She is well-educated professional who is highly active cultural consumers and creators, She is leader rather than followers. Confident in her own tastes, she will act spontaneously according to her mood and pay little attention to what others think.

Motivation: She feels a close tie between the museum content and their professional or hobbyist passions. Her visits are typically motivated by a desire to satisfy a specific content-related objective."

1.Planning	2.Pre-visiting	3.Visiting	4.Post-visiting
Anna-Marri knows that there should be a exhibiton of a very interesting aritist in Kiasma in this month, by recieving recommendations from siteknows 3 months ago. Now this exhibtion has started, Siteknows remind her to join this event. With one click, she can arrange visiting Kiasma on her calendar.	She reads some detailed information about this exhibition while she is on the tram on her way from school to Kiasma.	When Anna-Marri steps into Kiasma, she takes out her Iphone and use Siteknow to find out where is her target exhibtion, she is mainly for this exhibiton today. Anna-Marri kowns very much about this artist, the collections of this new exhibiton arouse her emotional resonace. She writes few reviews to speak highly of the artist for his unstoppable creativeness and her understanding of some collections. She clicks "like" to some collections that inspire her, in terms of accessing the content with very easy way whenever she wants to find these.	There are some replies of her reviews, some other visitors thank for sharing knowlege and opinions. She can access the images and detailed information links of her liked collections through Siteknows, when she needs these materials in her creative works.

Hanna's Kiasma journey

Name: Hanna
Age: 16
Gender: Female
Family: Living with her parents
Income: None
Occupation: Student

Education: Highschool
Nationality: Finnish
Language: Native Finish speaker, Medium level of English

Cultural segment: She is studying and living with her parents. The art is one of her many leisure choices. She is adventurous when it comes to her arts and cultural consumption, viewing it is a means of developing herself as an individual.

Motivation: She is curiosity-driven with a generic interest in the content of the museum. She expects to find something that will grab her attention and fuel her learning.

1.Planning	2.Pre-visiting	3.Visiting	4.Post-visiting
Hanna is studing in high school and living with her parents in Helsinki. Her teacher arranged a Kiasma visiting tour for her class.	She didn't know Siteknow before she arrives Kiasma in the morning.	One of front desk staff of Kiasma recommends her Siteknows APP.She starts to use the indoor-positioning function to navigate her indoor journey. Each time when she passes a hall, the corrsponding information pops out by the notification bar.By clicking the notification bar,she gets the audio introduction of the art work by authors, other visitors' discussions, and background knowledge related the work.She and her clssmates have nice conversations around those contents.	After this tour, she also uses Siteknows to check some cultrual events, and she is more engaged in cultural activities. Culture related content becomes a topic of she and her classmates.

Figure 10. Personas

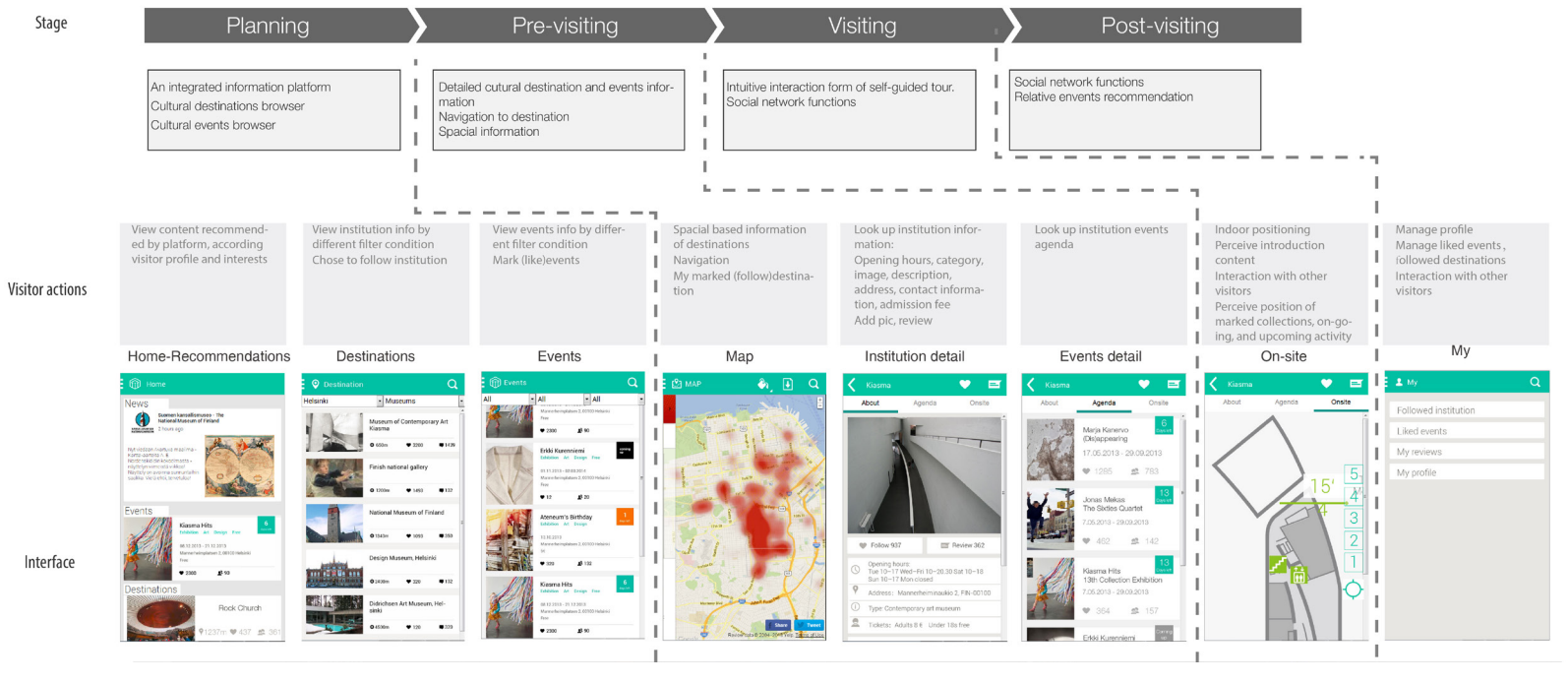
Four different user scenarios were constructed to map the visiting stages that consist of Planning, Pre-visiting, Visiting, and Post-visiting. The user scenarios were visualized in the form of storyboards with textual stories located under each stage. Through this method of user scenarios the design team was able to make assumptions about target users and decision making. For example the questions such as “why are we building this feature” “why do we chose this form of interaction design” could be evaluated in a more explicit manners.

Based on the user scenarios, the functional features and corresponding interface were developed as below , see figure 11 and appendix 1:

The “Home-recommendation” page, events page, and destination page refer to the planning stage of the whole customer journey. Home-recommendation page provides the recommended cultural related information according to the users using history. Users can view recommended events, destinations and cultural related news.

“Events” page provides cultural events of the whole Helsinki area. Here the users can find events by events list that shows events’ titles, thumbnails, number of people anticipated and who are interested in, event date, number of days left, event address, price, and keywords. Users can also find events by searching events and by filtering the areas, time and categories. If entering the next level, “event detail” shows more detailed information of individual events. Event information such as titles, thumbnails, the number of people who are interested in and anticipate, event date, number of days left, view event address, view event price, keywords are presented on this page. Users can view and post (reply) discussions of this event, and take action to this event (for example be interested or become a participant in the event or share this event to other social network sites). Similar or related events recommendations are also provided.

Figure 11. Functional Features of Each Stage and Corresponding Interface.



“Destinations” page is similar to the events page, providing the cultural destination list. The institution’s titles, thumbnails, number of people followed, number of reviews, and the distance between the user’s current location and the desired destination is presented. Searching destinations by names, filtering destinations by areas and categories would be technically supported in this page.

The “Home-recommendation”, “Events”, and “Destinations” pages mainly serve the planning stage in the customer journey process as an integrated information platform. For supporting the pre-visiting stage, the “map” and “institution detail” provide the navigation and detailed information for the visitors to reach the desired cultural destinations or events. To support the pre-visiting stage, the “map” page shows the geo-information of cultural destinations. The heat map is given to present information of the cultural institution in question in a more intuitively visualized way.
“Institution detail” page is the core part of the mobile interface. “About” shows destination information (photos, number of follows and reviews, opening hours, address, types, tickets information)
“Agenda” shows the activity arrangement of this institution.

As the place to enhance on-site mobile service experience, the “On-site” session provides in-door positioning functions, and the on-site interactive content delivery. This session enables the new mechanism that enhances the interaction between the information service from cultural institution and visitors. To continue the service, “my” page is the place where users can manage the followed institutions, liked events, reviews, and user profiles.

By using personas and storyboards, the project team was able to decide the features that should be designed to meet the needs of user scenarios. It helped to translate the research result into design outputs. At this point, the initial service concept that addresses the functionalities supporting customer experience has been developed.

4.3 Develop

In the Develop stage the basic service concept that attempts to address the initial objectives has been developed by the project team. The service concept needs to be evaluated in order to justify how it meets the original goals, which is considered by project team to determine whether continue or terminate this concept. The feedbacks are also needed to support next stage development. Anticipated experience evaluation (AXE) is the main user involvement technique implemented in this stage.

4.3.1 Implementation of anticipated experience evaluation (AXE)

Five participants that were consisted of one museum staff, one tourist guide, one art teacher, and two common visitors, were interviewed and the subsequent data were analyzed in this evaluation. This evaluation is planned and arranged into three sessions:

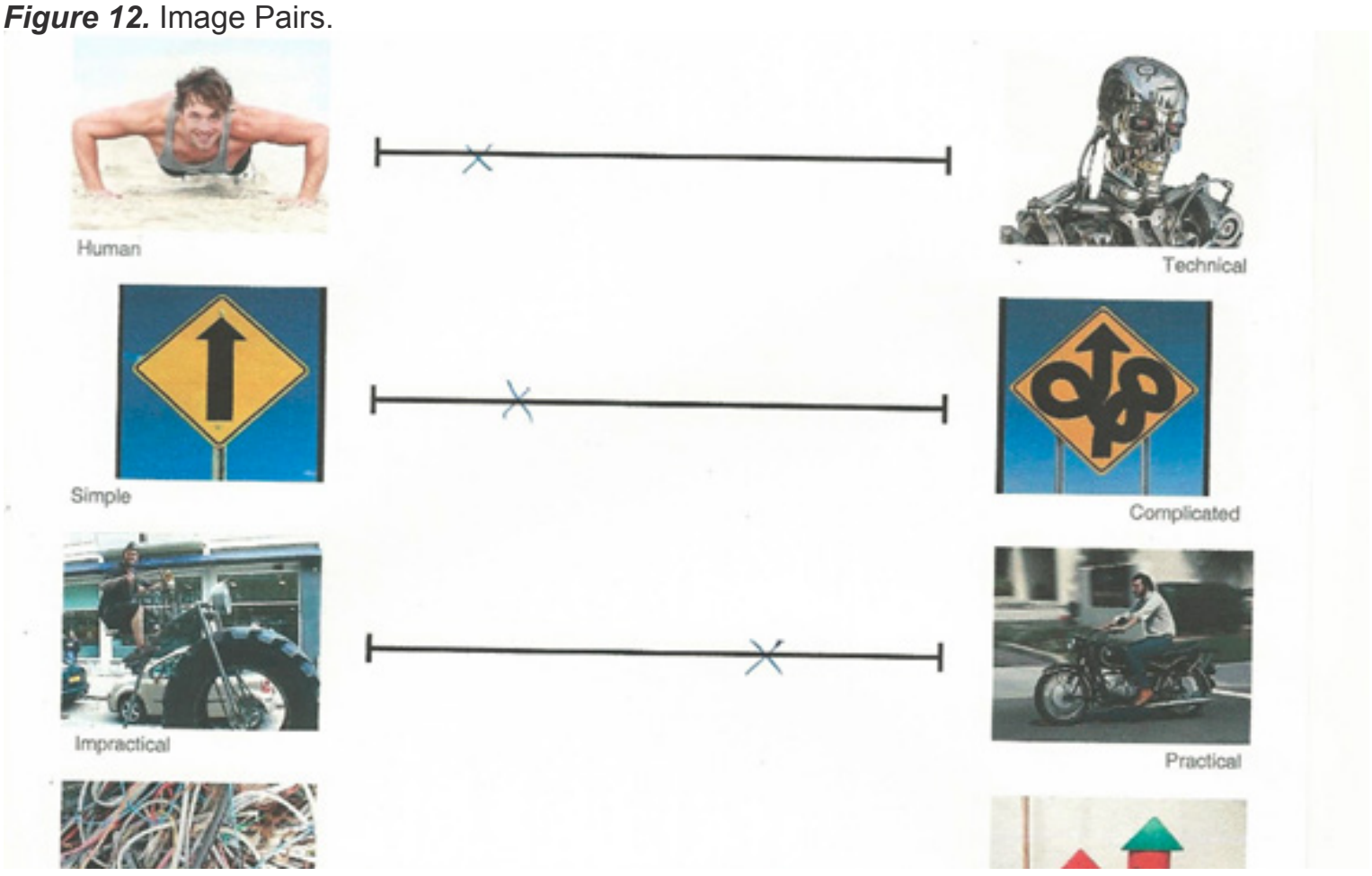
1) Concept introduction.

First the description was presented to the participants one by one through reading out to them while each participant was also handed a copy so that he or she can return to description at a later stage to clarify the perception. Then early concept narratives were presented. There were four persona stories, meanwhile the author was also guiding participants to the corresponding position on the illustration. Last an interactive prototype (link see appendix 1)was presented to participants one by one in a way that each participant could have few minutes to play the prototype. The participants were also encouraged to ask questions if there is anything unclear. The concept introduction takes fifteen minutes.

2) Evaluation interview.

The main element of the Anticipated experience evaluation (AXE) consists of a sheet that contains image pairs and scales (see figure 12). The image pairs refer to “stimuli to aid participants in reflecting and expressing their experiences, attitudes, opinions and beliefs towards a given product concept (Gegner & Runonen 2012)”. One change is made from the original method, which is that the textual description of the image pairs are also presented below the corresponding image. In this way it could avoid the problem that the semantic meaning of images are ambiguous for different people, and which is noticed in the internal test of project team.

Figure 12. Image Pairs.



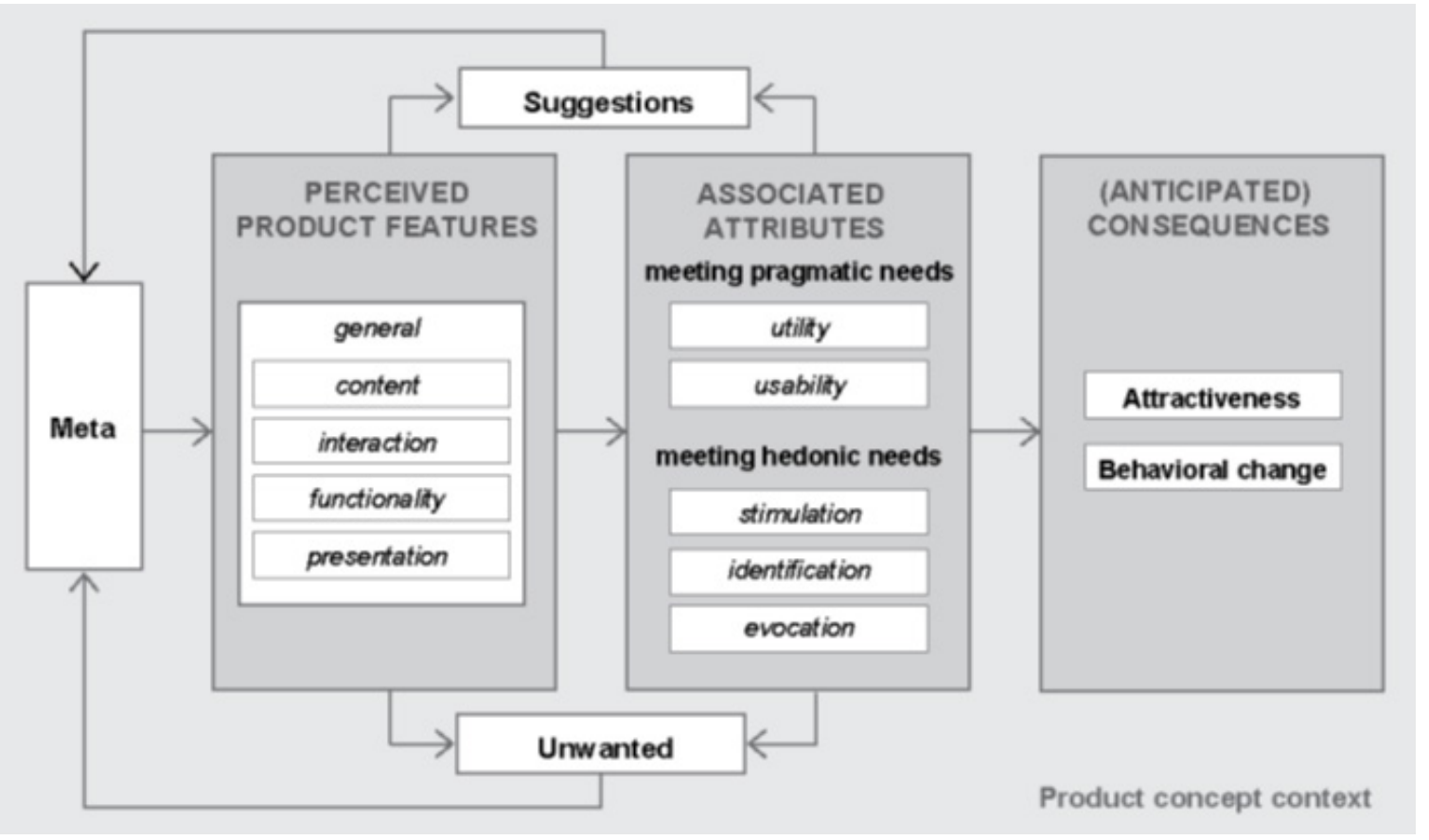


Figure 13. Data Analysis.

This sheet will be given to give each interview a similar structure and to both help and steer participants to talk about the experiential aspects he or she perceives. The participant is asked to indicate which of the presented images he or she more closely associates with the concept in question. Once a mark had been drawn on one scale, he or she was asked to explain why he or she associated the concept more with image A instead of image B. Further questions were asked based on the participant's answer, such as "can you explain in a more detailed manner what makes this application human?" and "why do you prefer human to technical?"

3) Data analysis.

The data are analyzed by applying the framework provided by Gegner and Runonen (2012). (Figure 13) The evaluation transcription was categorized and labeled into segments of perceived features, associated attributes, and anticipated consequences. (A sample transcription see appendix 2)

The perceived product features refer to the triggers for associated attributes and consequences within a certain context. General statements of this concept from participants are positive, for example the descriptions such as empathic, appealing, practical are presented. The results show the participant could perceive and appreciated the core functionalities and contents, for example the in-door positioning and the information offering for all cultural institutions, which fit the initial design goals. The interaction is the issues concerning the operational use, for example, some inappropriate positions of button may cause miss-click. It received certain numbers of suggestions for the future interaction design, especially for some details were not noticed. The presentation concerning the appearance of the interface in this context received highly affirmative

feedback, which was considered that it balances the position between accessibility and premium appearance.

Associated attributes refer to impressions participants connected with services and related interfaces of the concept. Positive impressions, such as the description of being “practical” and “well-structured” were reported referring to pragmatic attributes, which covers issues like utility and usability. Noticeably, all the participants reported the motivating impression, meaning they will be more motivated to visit cultural institutions and more proactively looking for information of contents during the visiting by using this service. Relatively the attributes of identification and evocation were weakly reflected in this evaluation.

Anticipated consequences mainly represent the judgments about the concept. Participant’s perceived consequences of the concept or a particular characteristic (attractiveness) are presented, for example “I like the idea of the pop-up thing. You don’t need to search; the information comes to you”. Behavioral changes are also presented by participants, for example “I would check the information and visit museums more, if I have this application.”

Additionally, the numbers of suggestions were collected in this evaluation. These suggestions vary from strategic level, through information structure of the application, to interaction design. For instance, to integrate other social media site within the application could be seen as a strategic suggestion. The suggestion of highlighting the position the indoor positioning function at more primary place is an advice for the information structure the application. Suggestions such as adding a swipe control manner to the main menu are helpful for the interaction design.

4.4 Deliver

According to Design Council (2007), deliver stage is about finalizing and launching resulting product or service in the relevant market. The related activities could include final testing, approval and launch, evaluation and feedback loops. In Siteknows project, it means to implement the service concept in relevant market. The Siteknows mobile service will be experimented in numbers of pilot institutions to verify its sustainability. Due to the time restriction, the Siteknows project has not been conducted to deliver stage, until the finishing of this thesis research. The possible design activities of the deliver stage could include testing the initial mobile application with users, and iteratively developing mobile application user interface during the experiments with pilot institutions. Until before the deliver stage, the service concept of Siteknows has been developed. The outcome of service concept will be presented in next chapter.

05

SERVICE CONCEPT FOR CULTURAL INSTITUTIONS

5.1 Service system map

Siteknows platform uses different technical channels to enable an integrated information service for cultural institution visitors. This system involves different cultural institutions to participate in this service to satisfy their visitors.

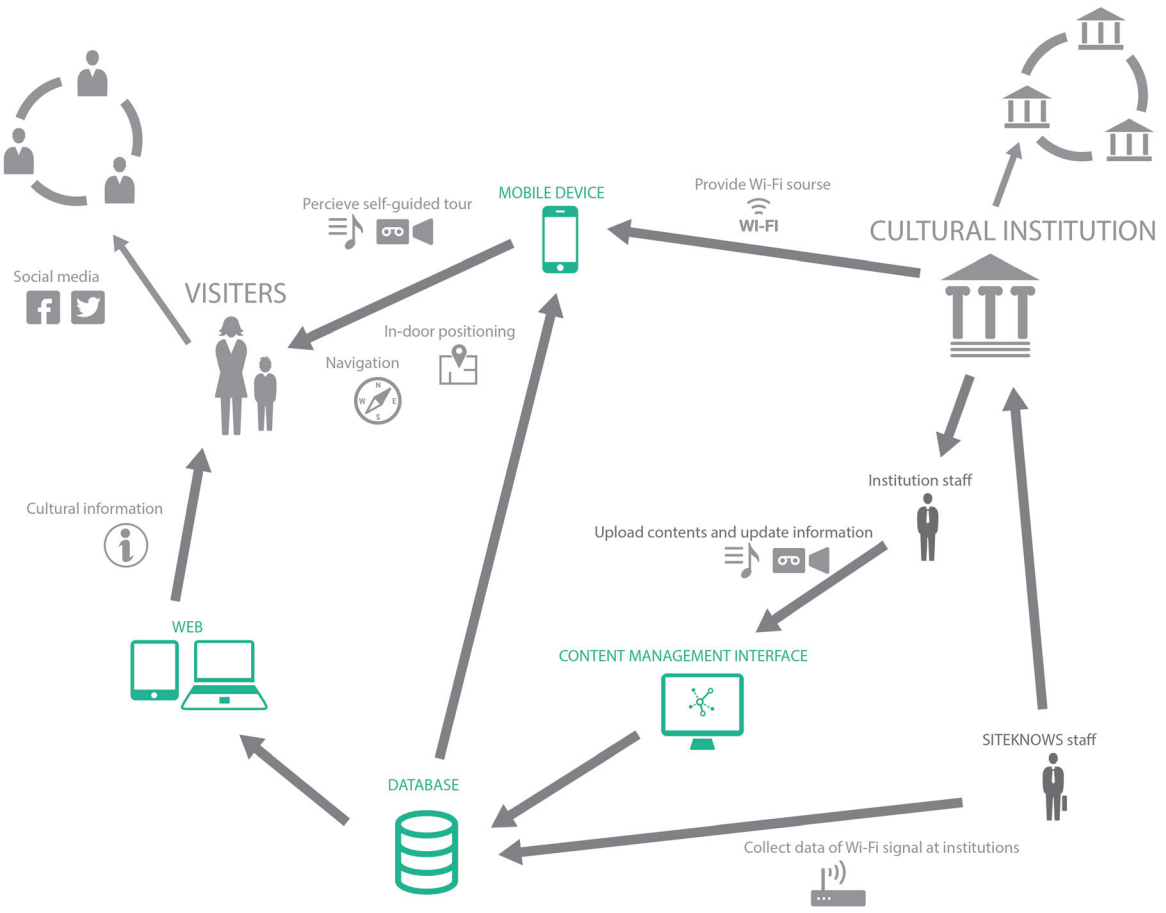
In order to support the representation of service solutions through the description of how the system works, a system map tool has been developed. The tool is based on the visualization of the relationships of all stakeholders in this service. Different stakeholders and technical nodes, as well as their mutual links are represented by the flows of information and actions through the system.

The technical nodes of Siteknows platform consists of data base, web-based content management interface, and mobile device applications. The cultural institution staff uploads the information content through the content management interface. The content management interface enables museums' staffs to create and manage the content based on their working process.

This information is then stored on the database of Siteknows. The Siteknows staff collects the Wi-Fi signals in the physical space of the cultural institution, that are then used for enabling in-door positioning and self-guided tour(s).

Visitors can access the information service through the web page, and mobile applications provided by Siteknows. Through integrated information collected from different cultural institutions, the visitors are provided with the information service for decision making and route planning. When it comes to the on-site visiting, the mobile application provide the visitors an intuitive self-guided service. This self-guided service is enabled by Wi-Fi signals provided by cultural institutions and the Wi-Fi signal data collected by Siteknows. The corresponding information content of a specific location is delivered to users' mobile device. The visitors receive the information contents in multi media format (for example text, audio, and video) to support their visiting. Visitors are also able to communicate to other people through embedded social network functions and other social network sites. The cultural institutions are also able to participate in the conversations of the contents provided by the institution.

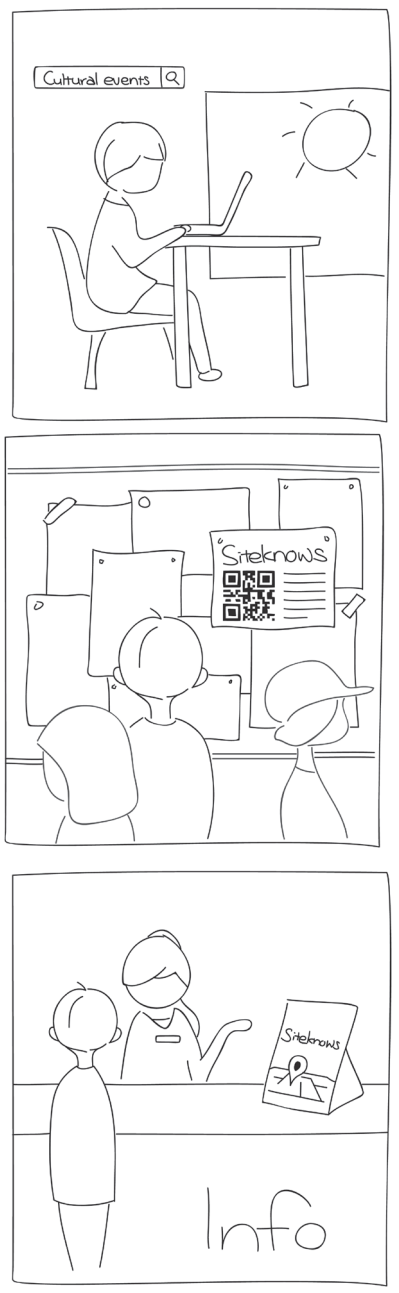
Figure 14. Service System Map.



5.2 Service journey map

From a visitor’s perspectivehe, The Service journey map is a general process of Siteknows service journey. It describes the visitor’s actions, motivations, using scenarios, and interactions with touch-points. The descriptions and corresponding pictures of each using case form the service journey map. There are two sessions of Siteknows service journey including service discovering process, and service using process. The service discovering process consists of various possible channels, and visitors can reach the service by these channels. The service using process describes a general linear process of using the service, abased on the sequence of a cultural institution visiting journey.

Figure 15. Service Discovering Process



1) Visitors could find the service online when they search tourist information and cultural related information. They could find the web page of Siteknows, and download the application. The web page provides instructions to lead visitors installing Siteknows mobile application.

2) Visitors could find the quick response (QR) code on printed materials that can quickly lead visitors installing the application. These materials could be released at the places where the potential users most probably go, for example the airport, the railway station, and the tourist information center.

3) Visitors can also install the application on the recommendation of cultural institution staff when they are physically at the place. The cultural institution staff could help visitors to install the application by using quick response (QR) code printed on cards or brochures; also give visitors brief instructions or demonstrations.

Figure 16. Service Using Process.

1) Visitors use Siteknows web page or mobile application to plan their destinations. They can find the information of cultural destinations, cultural events and cultural related news. They choose numbers of cultural institutions as their destination and mark some interested exhibitions.

2) Visitors use Siteknows mobile application to plan their visiting route among their target institutions. The application provides them an intuitive information presentation and assists them to reach the location.

3) When visitors arrive at the institution, the application notifies them of the on-site information service. It means this particular cultural institution provides in-door positioning based information service and visitors could start their guided tour.

4) The mobile application provides visitors the in-door positioning function, and on-site related information including the position of their interested exhibitions and works.

5) As visitors pass through each exhibition hall, the application delivers to them corresponding contents which could be in textual, audio, and video forms. Each time, the contents delivered by the application are based on the visitors real time position. This means they can perceive the contents without extra efforts, like finding the code of a specific work and typing the codes, or scanning quick response (QR) code of a work. Visitors only pay attention to the art works. They perceive the content in a very natural way, similar to a human guided tour.

6) Visitors write some reviews of some contents that also reviewed by other visitors. They are also able to share the content to other social network sites by simple clicks.

7) After the visiting, visitors continue the conversation about the contents that they are interested in. According to the visiting histories and interests, the Siteknows will also present them the recommendations of related cultural information.

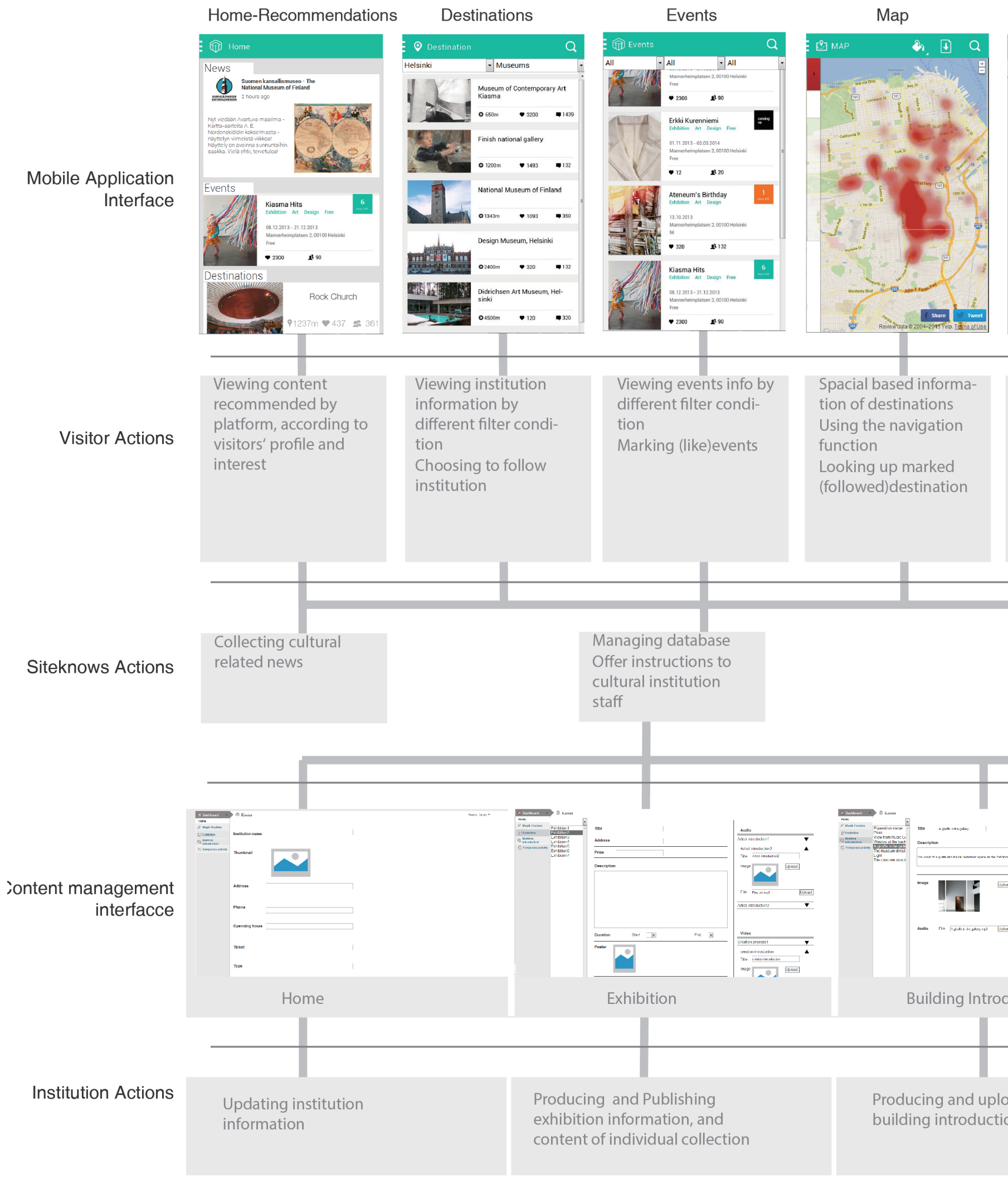
Figure 16. Service Using Process.

5.3 Service Blueprint

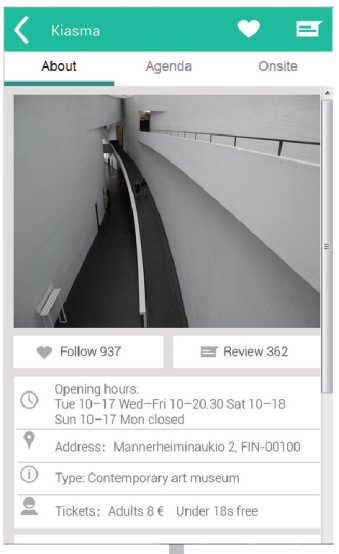
The blueprint is established to analyze the feasibility of a service concept and can be used as an instruction during the implementation of a new service process. The customer journey above presented the service from the perspective of the customer, while the blueprint provides a more detailed explanation of how to enable each step of the service by mapping a flow chart of all the activities involved in providing the service. According to Bitner et al. (2008), a typical service blueprint consists of five components: 1) customer actions; 2) on-stage / visible contact employee actions; 3) backstage / invisible contact employee actions; 4) support process; and 5) physical evidence. Based on the need of describing the principle of Siteknows system, the author makes some adaptations to emphasize its mobile service feature.

There are five aspects describing different actions or interfaces or Siteknows service process. The mutual relationships of different process are illustrated on the map. First, the physical evidences, namely the mobile application interfaces in this context, are mapped on the blueprint. It shows the key application interfaces used by visitors through the entire service process. Then the corresponding visitors' actions at each step are presented showing the specific interactions between visitors and application. The Siteknows actions part shows the activities of Siteknows realizing the functionalities of the system in each step of the service. Following the content management interfaces are demonstrated, which explain the mechanism of collecting information from cultural institutions. Lastly, institution actions part shows the working flow of cultural institution supporting this service. This working flow is designed to adapt existing working process of managing information contents in cultural institutions.

Figure 17. Service Blue Print.

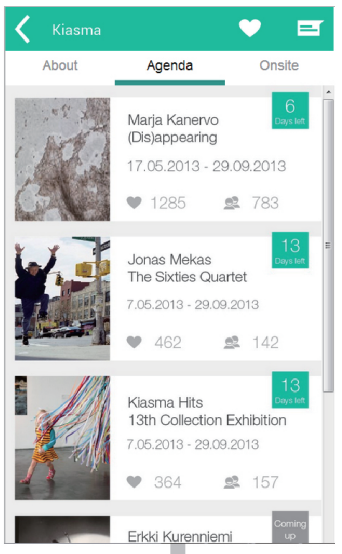


Institution detail



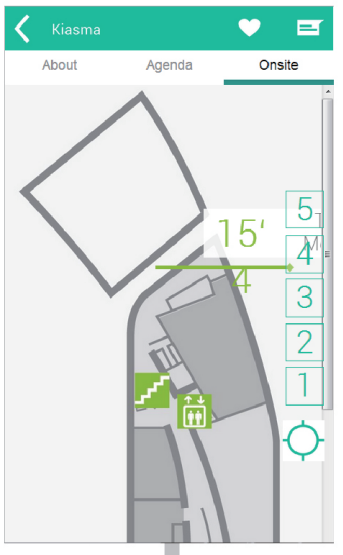
Looking up institution information:
opening hours, category, image, description, address, contact information, admission fee
Add pics, reviews

Institution agenda



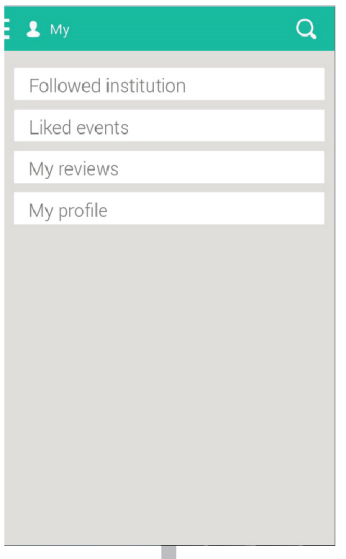
Looking up institution events agenda

On-site



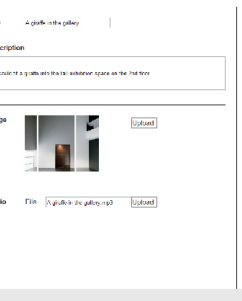
Using in-door positioning
Perceiveing position based contents
Interacting with other visitors

My

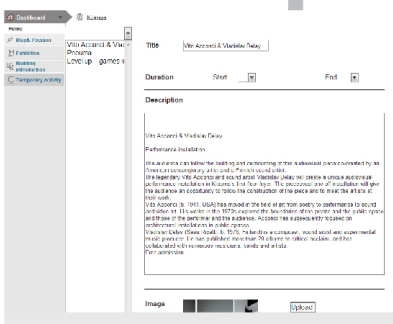


Managing user profile
Managing liked events, followed destinations
Interacting with other visitors

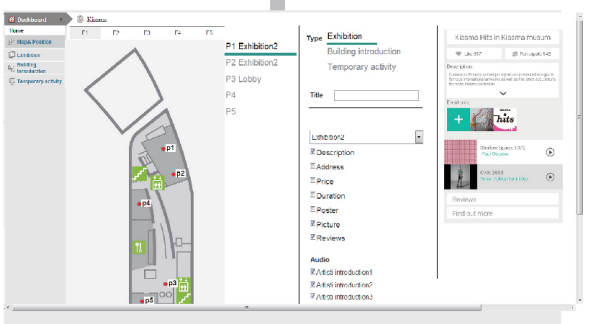
Collect ing Wi-Fi signal
Maintaining indoor Wi-Fi positioning accuracy



ilding Introduction



Temporary Activity



Map& Position

ng and uploading
g introduction content

Editing temporary activities

Collecting position data of individual collection or event, and associating contents to position

06

CONCLUSION

This thesis mainly addressed two research questions to understand the issues of how to develop a new mobile service concept for cultural institutions by involving users. The literature review and the empirical study were applied to give answers to these research questions. In the following the answers of the two research questions are summarized respectively.

How to define a service concept that would allow the project team to describe, the elements of platform and its usage to the client, particularly from the point of view of service design and cultural institutions?

In the empirical study, a series of tools were utilized to form the service concept. These tools are from service design perspective and they are shown as visualizations. The system map describes the different actors involved, namely their mutual links and the flows of materials, efforts, and information through the system. It presents an image of the entire service. Customer journey map focuses on the touch-point from the visitors' point of view, which refers to the customer value. The service blueprint demonstrates the characteristics of the mechanism of service system in the high level of details. The work flow for cultural institutions to verify, implement and maintain this service is presented by service blueprint. These tools helped presenting the shared understanding of project team and other stakeholders, and each of them addresses a unique aspect of Siteknows service concept. To summarize, the utilization of a series of service design tools in question played a role of helping mediate between customer needs and the project team's strategic intents, as well as clarifying the service concept in the service concept development process.

How to implement service design theory and related user involvement techniques to support this new service concept design process?

The theoretical findings from Human Centered Design (HCD) address the user involvement from different aspects including Usability& Experience, Participatory design, Ethnographic fieldwork, Contextual design, Co-design, Agile design. In these different theoretical aspects process user data with different purpose and focuses, also provide numbers of techniques for design practice.

The Siteknows project has been developed from discover, through define, to develop stages, and it is an ongoing project that did not reach the deliver stage. In different stages, the project team implemented various user involvement techniques to meet the design requirements. In the discover stage, it applied informative techniques to understand the existing service delivering context, and supportive user involvement techniques to discover a wide range of ideas and unrevealed opportunities. In the following define stage, findings from the discover stage were transferred into ideas and service prototype, by implementing supportive user involvement techniques. The evaluative technique was implemented to perceived interfaces and service features, as well as emotional impressions of the service concept, also possible consequences of usage. A series of suggestions were also gathered in the evaluation interviews, which may be considered practically helpful for the future design.

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Appendix

Appendix 1

Interactive prototype link:
http://v3g742.axshare.com/#p=home

Appendix 2

Transcription of interview of Minna Raitmaa, (the head of public programs of Kiasma museum of contemporary art).

Me: You have marked that you associate the concept strongly to human. What makes you feel it's human?

Minna: It's because of the whole idea is empathic. It's easy to use, easy to reach, and it's not very technical. It looks it knows how people working, how people moving. It knows how simple think, it helps people to find their way in that way, if they can find this application.

Me: You marked the simple side, but not the extremely simple.

Minna: It's pretty easy to use, and it's quite clear and simple. Because it's not offering too many alternatives, I like the idea if it's going to be pop-up thing. You don't need to search; the information comes to you, in that way. And the graphic I have seen it's very simple to read.

Me: What makes you have some concerns? You didn't put the extremely simple.

Minna: I don't see the full very yet, I don't know it really works. It's hard to say. But it's more simple than complicated anyway.

Me: You put it on practical side. What makes you feel it practical?

Minna: The same reason, it's simple to use, it doesn't offer too many alternatives or too many ways to say. In that way, it's practical. But, this is only the user's point of view, this means they have already found this concept and used it. After you found it, it's simple and practical. From user's point of view, I might say it's impractical.

Me: Could you explain that in a more detailed way?

Minna: Well if I am a user and I find it, it's practical. But.. Ok, it's practical for institution. Maybe for institution it's really hard to be connected to it, so that you are not alone. If it's working automatically.

Me: Your mean the information gathering?

Minna: yes, if institution can decide what information is there and information always updated. If it's automatic and information is from institutions database, it's very practical. If it's not, you have to fill the information by hand, it's very impractical. It's very hard to encourage institution to do this. But I am answering for the user who has already found it.

Me:Ok

Minna: this is the same answer as practical (simple). It's easy to use, simple, and understandable. You can see everything by one look, you don't need to scroll so much, and you don't need to search. All these things make it easy to structure, easy to read.

Me: Please go ahead. You put it in the middle.

Minna: yes, I can't answer this. Because it really depends on how much users you have, and how big the base is. What other systems can connect with. I can't answer that, because I don't know how easy it is to make twittering. For example, if I found something, maybe I want to tell something in twitter, not inside of this.

Me: So you prefer it connected.

Minna: yes, absolutely. I don't see why, it's not good to be connective. Everyone uses applications and devices to connect with others. So if it's isolating system, it gets a problem. I am not sure; I don't think people want to install a new platform, because we've already had old platforms (social media platforms).

Me: What do you think that can make this platform more connective?

Minna: If it's flexible enough, if it connects other platform, like twitter, Facebook, and all the coming twitter and Facebook. Instagram, and future Instagram, I don't think it's wise to isolate it from other. But it's only feeling, I don't have research, statistics.

Me:

Minna: Professional .how this concept is made. I just happen to know the background of this concept, and I see how much you have been working behind the seeing. You can also see how it looks like in the end, it's very professional.

Me: From a user perspective, do you prefer unprofessional or professional?

Minna: Yes, that's an institution's view. But I think even user appreciate professional result, even it can look unprofessionally. But I think all things are made professionally, the quality is how it really works, if you want to make quality, you have to make it works.

Me:

Minna: it's little bit stylish, I don't know, if it's important. If it's about design, it could have its own style, and even more personality. But if you do it too stylish, the risk is too make it more complicated, hard to read, hard to understand. You have to be careful how stylish you

should do it, how much design. I think it's wise to do something simple and universal, not so time based. You can be over stylish. If you are too stylish in this year, it looks tacky after 3 years. It's hard to trending in a way.

Me:

Minna: This is a difficult question cheap and premium. I think it is quite in the middle, if you want people to use it, it cannot cost too much. The system is not important, the utility from how usable is this, and how well it serves the users. But people don't want to pay too much.

Me:

Minna: here I want to say it's more inventive than conventional. There are many many good ideas behind. For example I like this hot spots thinking, and you can visualize something that individuals make marks and comments on the map. I like this kind of thinking, I think it's very inventive. If you want to start this business, you have to be inventive all the time, like new ways of visualizing things all the time. If you want to build your brand, inventive is hard work.

Me:

Minna: this pleasant is very important thing. It's usable, it's simple

Me: what kind of scenarios can be pleasant for the users?

Minna: this kind of design for all thinking, it's very reachable. All these solutions, all the colors, how you move from one side to another, everything has to be smooth. The contrast, and everything, it's like the whole experience makes it pleasant. This design for all thinking, I think could be the good thing to have in mind, because if it works, many things work for twelve year old for everyone. If you designed something that you directly can see how to use it, it makes pleasant. Because you are satisfied while you use.

Me:

Minna: this is almost the same as pleasant. Because if something pleasant, you like it.

Me:

Minna: if you get the positive experience, you find it attractive. If it gives you some kind of rewards, you make contribution, and then you get reward, wow! It looks like this. That makes it attractive, and you use it again and again. I don't know if it's attractive yet, if there are many users, is going to be attractive

Me:

Minna: motivating, this is hard to answer. But it has to be motivating to success. Absolutely, like you told about different users, has to be motivating. It really helps tourists; it helps people to find what they want.

Me: What do you think can make it more motivating?

Minna: it's motivation, when it answers your needs. You have a need from the beginning, you want to see something. If it works, it motivates you to go further.

Me:

Minna: this is also hard to answer, creative or not. How much you can make your own contribution in this application, why use it. I don't know if people want to be creative here. If the user wants to get help.

Me: What's your perspective? Do you prefer creative of not?

Minna: People like to show others that they are creative. Of course if there are some creative arts doing this it can increase the motivating of the thing, but I can't imagine what it is in

this application, when you need “help” to find something, to do something, to interact. So this is very interesting question, I am very hard to answer. Should you do some kind of visitor survey on this, do they really want to be creative. I don’t know, if you could ask people. I think I wouldn’t.